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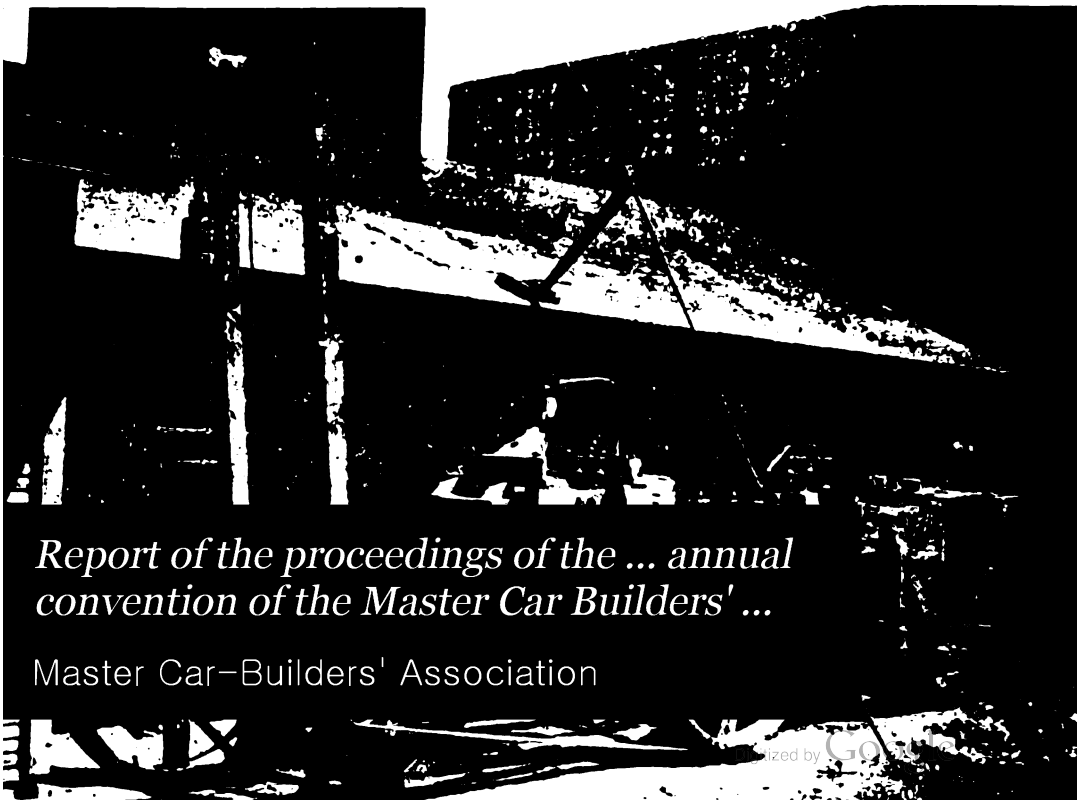

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Master Car-Builders' Association

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REPORT OF THE PROCEEDINGS

OF THE

FORTY-EIGHTH ANNUAL CONVENTION

OF THE

MASTER CAR BUILDERS' ASSOCIATION

HELD AT

ATLANTIC CITY, N. J.

JUNE 10, 11 AND 12

1914

PART 1

CHICAGO, ILL.
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LIST OF CONVENTIONS.

Conventions have been held at the following places, on the dates and with presiding officers as given.

A general convention preparatory to organization was held at Springfield, Mass., on May 15, 1867, when John Milligan was Chairman.

Convention.	President.	Date.	Place.
First	I. W. Van Houten	1867,	Altoona, Pa.
Second	I. W. Van Houten	1868,	Dayton, Ohio.
Third	I. W. Van Houten	1869,	Chicago, Ill.
Fourth	I. W. Van Houten	1870,	New York, N. Y.
Fifth	F. D. Adams	1871,	Richmond, Va.
Sixth	M. C. Andrews	1872,	St. Louis, Mo.
Seventh	M. C. Andrews	1873,	Boston, Mass.
Eighth	I. W. Van Houten	1874,	Cincinnati, Ohio.
Ninth	Leander Garey	1875,	New York, N. Y.
Tenth	Leander Garey	1876,	New York, N. Y.
Eleventh	Leander Garey	1877,	Cleveland, Ohio.
Twelfth	Leander Garey	1878,	Niagara Falls, N. Y.
Thirteenth	Leander Garey	1879,	Chicago, Ill.
Fourteenth	Leander Garey	1880,	Detroit, Mich.
Fifteenth	Leander Garey	1881,	New York, N. Y.
Sixteenth	Leander Garey	1882,	Philadelphia, Pa.
Adjourned, on reorganization.	Leander Garey	1882,	Niagara Falls, N. Y.
Seventeenth	Leander Garey	1883,	Chicago, Ill.
Eighteenth	Leander Garey	1884,	Saratoga, N. Y.
Nineteenth	Leander Garey	1885,	Old Point Comfort, Va.
Twentieth	B. K. Verbryck	1886,	Niagara Falls, N. Y.
Twenty-first	B. K. Verbryck	1887,	Minneapolis, Minn.
Twenty-second	William McWood	1888,	Alexandria Bay, N. Y.
Twenty-third	William McWood	1889,	Saratoga, N. Y.
Twenty-fourth	William McWood	1897,	Old Point Comfort, Va.
Twenty-fifth	John Kirby	1891,	Cape May, N. J.
Twenty-sixth	John Kirby	1892,	Saratoga, N. Y.
Twenty-seventh	E. W. Grieves	1893,	Lakewood, N. Y.
Twenty-eighth	E. W. Grieves	1894,	Saratoga, N.Y.
Twenty-ninth	John S. Lentz	1895,	Alexandria Bay, N. Y.
Thirtieth	John S. Lentz	1896,	Saratoga, N. Y.
Thirty-first	S. A. Crone	1899,	Old Point Comfort, Va.
Thirty-second	S. A. Crone	1898,	Saratoga, N. Y.
Thirty-third	C. A. Schroyer	1899,	Old Point Comfort, Va
Thirty-fourth	C. A. Schroyer	1900,	Saratoga, N. Y.
Thirty-fifth	J. T. Chamberlain	1901,	Saratoga, N. Y.
Thirty-sixth	J. J. Hennessey	1902,	Saratoga, N. Y.
Thirty-seventh	J. W. Marden	1903,	Saratoga, N. Y.
Thirty-eighth	F. W. Brazier	1904,	Saratoga, N. Y.
Thirty-ninth	W. P. Appleyard	1905,	Manhattan Beach, N.Y.
Fortieth	J. E. Buker	1906,	Atlantic City, N. J.
Forty-first	W. E. Fowler	1907,	Atlantic City, N. J.
Forty-second	G. N. Dow	1908,	Atlantic City, N. J.
Forty-third	R. F. McKenna	1909,	Atlantic City, N. J.
Forty-fourth	F. H. Clark	1910,	Atlantic City, N. J.
Forty-fifth	T. H. Curtis	1911,	Atlantic City, N. J.
Forty-sixth	Alex. Stewart	1912,	Atlantic City, N. J.
Forty-seventh	C. E. Fuller	1913,	Atlantic City, N. J.
Forty-eighth	M. K. Barnum	1914,	Atlantic City, N. J.

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OFFICERS FOR 1914-15

ELECTED AT CLOSE OF 1914 CONVENTION.

PRESIDENT.

D. F. CRAWFORD, G. S. M. P., Penna. Lines, Pittsburgh, Pa.

VICE-PRESIDENTS.

D. R. MACBAIN, S. M. P., L. S. & M. S. Ry., Cleveland, Ohio.
R. W. BURNETT, G. M. C. B., Can. Pac. Ry., Montreal, Can.
C. E. CHAMBERS, S. M. P., C. R. R. of N. J., Jersey City, N. J.

TREASURER.

JNO. S. LENTZ, M. C. B., Lehigh Valley Ry., So. Bethlehem, Pa.

SECRETARY.

JOS. W. TAYLOR, 1112 Karpen Building, Chicago, Ill.

EXECUTIVE MEMBERS.

* J. C. FRITTS, M. C. B., D. L. & W. R. R., Scranton, Pa.
* R. E. SMITH, G. S. M. P., Atlantic Coast Line R. R., Wilmington, N. C.
* H. T. BENTLEY, S. M. P., C. & N. W. Ry., Chicago, Ill.
† T. M. RAMSDELL, M. C. B., O.-W. R. R. & Nav. Co., Portland, Ore.
† C. E. FULLER, S. M. P., Union Pacific R. R., Omaha, Neb.
† C. F. GILES, S. M., Louisville & Nashville R. R., Louisville, Ky.

* Term expires June, 1916.
† Term expires June, 1915.

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COMMITTEES SELECTED FOR THE 1915 CONVENTION

STANDING COMMITTEES.

1. *Arbitration:*

J. J. HENNESSEY (Chairman), M. C. B., C. M. & St. P. Ry., Milwaukee, Wis.
T. W. DEMAREST, S. M. P., Penna. Lines, Ft. Wayne, Ind.
JAS. COLEMAN, S. C. D., Grand Trunk Ry., Montreal, Can.
M. K. BARNUM, G. M. I., B. & O. R. R., Baltimore, Md.
F. W. BRAZIER, S. R. S., N. Y. C. & H. R. R. R., New York City.

2. *Revision of Standards and Recommended Practice:*

T. H. GOODNOW (Chairman), A. S. C. D., C. & N. W. Ry., Chicago, Ill.
W. H. V. ROSING, Asst. to V.-P., St. L. & S. F. R. R., St. Louis, Mo.
C. E. FULLER, S. M. P., Union Pacific R. R., Omaha, Neb.
A. R. AYERS, C. M. E., N. Y. C. Lines, Chicago, Ill.
O. C. CROMWELL, M. E., Balto. & Ohio R. R., Baltimore, Md.
O. J. PARKS, G. C. I., Penna. Lines, Ft. Wayne, Ind.
R. E. SMITH, G. S. M. P., Atlantic Coast Line R. R., Wilmington, N. C.

3. *Train Brake and Signal Equipment:*

R. B. KENDIG (Chairman), G. M. E., N. Y. C. Lines, New York City.
B. P. FLORY, S. M. P., N. Y. O. & W. R. R., Middletown, N. Y.
J. M. HENRY, S. M. P., Penna. R. R., Pittsburgh, Pa.
L. P. STREETER, Air Brake Engr., Ill. Cent. R. R., Chicago, Ill.
R. B. RASBRIDGE, C. C. I., Phila. & Reading Ry., Reading, Pa.
W. J. HARTMAN, Air Brake Inst., C. R. I. & P. Ry., Chicago, Ill.
A. J. COTA, M. M., C. B. & Q. R. R., Chicago, Ill.

4. *Brake Shoe and Brake Beam Equipment:*

CHAS. H. BENJAMIN (Chairman), Purdue University, Lafayette, Ind.
C. D. YOUNG, Eng. Tests, Penna. R. R., Altoona, Pa.
R. B. KENDIG, G. M. E., N. Y. C. Lines, New York City.
J. F. DEVOY, A. S. M. P., C. M. & St. P. Ry., W. Milwaukee, Wis.
C. B. YOUNG, M. E., C. B. & Q. R. R., Chicago, Ill.

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5. Couplers:

R. L. KLEINE, C. C. I., Penna. R. R., Altoona, Pa.
G. W. WILDIN, M. S., N. Y. N. H. & H. R. R., New Haven, Conn.
F. W. BRAZIER, S. R. S., N. Y. C. & H. R. R. R., New York City.
F. H. STARK, Supt. R. S., Montour R. R. Co., Coraopolis, Pa.
J. F. DEVOY, A. S. M. P., C. M. & St. P. Ry., W. Milwaukee, Wis.
B. JULIEN, G. F. C. D., Union Pacific R. R., Omaha, Neb.
J. W. SMALL, S. M. P., S. A. L. Ry., Portsmouth, Va.

6. Loading Rules:

A. KEARNEY (Chairman), A. S. M. P., N. & W. Ry., Roanoke, Va.
A. B. CORWITH, G. C. I., A. C. L. R. R., Wilmington, N. C.
L. H. TURNER, S. M. P., P. & L. E. R. R., Pittsburgh, Pa.
R. L. KLEINE, C. C. I., Penna. R. R., Altoona, Pa.
J. M. BORROWDALE, S. C. D., Ill. Cent. R. R., Chicago, Ill.
C. N. SWANSON, S. C. S., A. T. & S. F. Ry., Topeka, Kan.
G. H. GILMAN, M. C. B., Northern Pac. Ry., St. Paul, Minn.

7. Car Wheels:

W. C. A. HENRY (Chairman), S. M. P., Penna. Lines, Columbus, Ohio.
A. E. MANCHESTER, S. M. P., C. M. & St. P. Ry., Milwaukee, Wis.
R. W. BURNETT, G. M. C. B., Can. Pac. Ry., Montreal, Can.
R. L. ETTENGER, C. M. E., Southern Ry., Washington, D. C.
J. A. PILCHER, M. E., N. & W. Ry., Roanoke, Va.
O. C. CROMWELL, M. E., B. & O. R. R., Baltimore, Md.
P. P. MIRTZ, M. E., L. S. & M. S. Ry., Cleveland, Ohio.

8. Safety Appliances:

D. F. CRAWFORD (Chairman), G. S. M. P., Penna. Lines West, Pittsburgh, Pa.
C. E. FULLER, S. M. P., Union Pac. Ry., Omaha, Neb.
JOSEPH L. HAINEN, G. S. M. P. & E., Southern Ry., Washington, D. C.
O. J. PARKS, G. C. I., Penna. Lines, Ft. Wayne, Ind.
C. B. YOUNG, M. E., C. B. & Q. R. R., Chicago, Ill.
H. BARTLETT, G. S. M. P., B. & M. R. R., Boston, Mass.
W. O. THOMPSON, M. C. B., N. Y. C. & H. R. R. R., Buffalo, N. Y.

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9. Car Construction:

W. F. KEISEL, JR. (Chairman), A. M. E., Penna. R. R., Altoona, Pa.
A. R. AYERS, G. M. E., N. Y. Central Lines, Chicago, Ill.
S. G. THOMSON, S. M. P. & R. E., Phila. & Reading R. R., Reading, Pa.
C. E. FULLER, S. M. P., Union Pacific R. R., Omaha, Neb.
H. H. VAUGHAN, Asst. to V.-P., Can. Pac. Ry., Montreal, Can.
E. G. CHENOWITH, M. E., C. R. I. & P. Ry., Chicago, Ill.
J. C. FRITTS, M. C. B., D. L. & W. R. R., Scranton, Pa.
T. M. RAMSDELL, M. C. B., O.-W. R. R. & Nav. Co., Portland, Ore.
C. L. MEISTER, M. E., Atlantic Coast Line R. R., Wilmington, N. C.

10. Specifications and Tests for Materials:

C. D. YOUNG (Chairman), Engr. Tests, Penna. R. R., Altoona, Pa.
J. R. ONDERDONK, Engr. Tests, Balto. & Ohio R. R., Baltimore, Md.
J. J. BIRCH, D. C. I., Norfolk & Western Ry., Roanoke, Va.
I. S. DOWNING, G. M. C. B., C. C. C. & St. L. Ry., Indianapolis, Ind.
E. P. TILT, Engr. Tests, Can. Pac. Ry., Montreal, Can.
FRANK ZELENY, Engr. Tests, C. B. & Q. R. R., Aurora, Ill.
A. COPONY, M. C. B., Grand Trunk Ry., Chicago, Ill.
A. H. FETTERS, M. E., Union Pacific Ry., Omaha, Neb.
J. W. TAYLOR, Secretary, Chicago, Ill.

SPECIAL COMMITTEES.

11. Car Trucks:

J. T. WALLIS (Chairman), G. S. M. P., Penna. R. R., Altoona, Pa.
E. W. PRATT, A. S. M. P., C. & N. W. Ry., Chicago, Ill.
JAS. COLEMAN, S. C. D., Grand Trunk Ry., Montreal, Can.
J. J. TATUM, S. F. C. D., B. & O. R. R., Baltimore, Md.
PROF. E. C. SCHMIDT, University of Illinois, Urbana, Ill.
L. C. ORD, G. C. I., Can. Pac. Ry., Montreal, Can.
J. McMULLEN, M. S., Erie R. R., Meadville, Pa.
A. R. AYERS, G. M. E., L. S. & M. S. Ry., Chicago, Ill.
E. G. CHENOWETH, M. E., C. R. I. & P. Ry., Chicago, Ill.

12. Prices for Labor and Material:

F. H. CLARK (Chairman), G. S. M. P., B. & O. R. R., Baltimore, Md.
G. E. CARSON, D. M. C. B., N. Y. C. & H. R. R. R., W. Albany, N. Y.
C. F. THIELE, G. C. I., P. C. C. & St. L. Ry., Columbus, Ohio.
IRA EVERETT, G. F. C. R., Lehigh Valley Ry., Packerton, Pa.
H. H. HARVEY, G. C. F., C. B. & Q. R. R., Chicago, Ill.
C. N. SWANSON, S. C. S., A. T. & S. F. Ry., Topeka, Kan.
SAMUEL LYNN, M. C. B., Pitts. & Lake Erie R. R., Pittsburgh, Pa.

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13. Train Lighting and Equipment:

T. R. COOK (Chairman), A. E. M. P., Penna. Lines, Pittsburgh, Pa.
C. A. BRANDT, A. M. M., C. C. C. & St. L. Ry., Indianapolis, Ind.
WARD BARNUM, Elec. Engr., L. & N. R. R., Louisville, Ky.
J. H. DAVIS, Elec. Engr., B. & O. R. R., Baltimore, Md.
C. H. QUINN, A. E. M. P., N. & W. Ry., Roanoke, Va.
D. J. CARTWRIGHT, Elec. Engr., Lehigh Valley R. R., So. Bethlehem, Pa.
E. W. JANSEN, Elec. Engr., Illinois Central R. R., Chicago, Ill.

14. Nominations:

F. W. BRAZIER (Chairman), S. R. S., N. Y. C. & H. R. R. R., New York City.
A. W. GIBBS, C. M. E., Penna. Lines, Philadelphia, Pa.
F. H. CLARK, G. S. M. P., B. & O. R. R., Baltimore, Md.
F. F. GAINES, S. M. P., Cent. of Ga. Ry., Savannah, Ga.
J. J. HENNESSEY, M. C. B., C. M. & St. P. Ry., W. Milwaukee, Wis.

15. Arrangements:

D. F. CRAWFORD, G. S. M. P., Penna. Lines West, Pittsburgh, Pa.

16. Tank Cars:

A. W. GIBBS (Chairman), C. M. E., Penna. Lines, Philadelphia, Pa.
THOS. BEAGHAN, Jr., M. C. B., Union Tank Line, New York City.
J. W. FOGG, M. M., B. & O., Chgo. Ter. Ry., Chicago, Ill.
C. E. CHAMBERS, S. M. P., C. R. R. of N. J., Jersey City, N. J.
WM. SCHLAFGE, G. M. S., Erie R. R., New York City.
C. A. SHOEMAKER, G. S., German-American Car Lines, East Chicago, Ind.
J. S. SHEAFE, M. M., B. & O. R. R., Staten Island, N. Y.

17. Settlement Prices for Reinforced Wooden Cars:

J. McMULLEN (Chairman), M. S., Erie R. R., Meadville, Pa.
H. G. GRIFFIN, G. C. I., Can. Pac. Ry., Montreal, Can.
T. J. BURNS, M. C. B., Mich. Central Ry., Detroit, Mich.
J. T. MEHAN, Asst. to M. C. B., C. M. & St. P. Ry., W. Milwaukee, Wis.
H. H. HARVEY, G. C. I., C. B. & Q. R. R., Chicago, Ill.
C. N. SWANSON, S. C. S., A. T. & S. F. Ry., Topeka, Kan.
F. F. GAINES, S. M. P., Cent. of Ga. Ry., Savannah, Ga.

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18. Compensation for Car Repairs:

D. F. CRAWFORD (Chairman), G. S. M. P., Penna. Lines West, Pittsburgh, Pa.
F. F. GAINES, S. M. P., Cent. of Ga. Ry., Savannah, Ga.
M. K. BARNUM, G. M. I., B. & O. R. R., Baltimore, Md.
C. E. FULLER, S. M. P. & M., Union Pacific R. R., Omaha, Neb.
C. F. GILES, S. M., Louisville & Nashville R. R., Louisville, Ky.
THOS. BEAGHAN, M. C. B., Union Tank Line, New York City.
H. L. OSMAN, S. C. D., Morris & Co., Chicago, Ill.
M. F. COVERT, A. M. C. B., Swift Refr. Trans. Co., Chicago, Ill.

19. Draft Gear:

J. F. DeVOY (Chairman), A. S. M. P., C. M. & St. P. Ry., W. Milwaukee, Wis.
W. E. DUNHAM, Supr. M. P. & M., C. & N. W. Ry., Winona, Minn.
E. A. GILBERT, Genl. Insp. M. P., So. Pac. Co., San Francisco, Cal.
J. R. ONDERDONK, M. E., B. & O. R. R., Baltimore, Md.
A. R. KIPP, M. S., M. St. P. & S. S. M. Ry., Fond du Lac, Wis.
G. W. RINK, M. E., C. R. R. of N. J., Jersey City, N. J.
P. F. SMITH, Jr., S. M. P., Penna. Lines West, Toledo, Ohio.

20. Joint Meetings — Master Car Builders' Association and American Railway Master Mechanics' Association:

From the Master Car Builders' Association:

R. W. BURNETT, G. M. C. B., Can. Pac. Ry., Montreal, Can.
J. S. LENTZ, M. C. B., L. V. R. R., South Bethlehem, Pa.
T. H. GOODNOW, A. S. C. D., C. & N. W. Ry., Chicago, Ill.

From the American Railway Master Mechanics' Association:

J. F. DeVOY, A. S. M. P., C. M. & St. P. Ry., W. Milwaukee, Wis.
C. E. CHAMBERS, S. M. P., C. R. R. of N. J., Jersey City, N. J.
C. F. GILES, S. M., L. & N. R. R., Louisville, Ky.

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LIST OF MEMBERS.

The names of Active members are printed in Roman type, Representative members in Italics, Associate and Life members in Small Capitals.

Date.	NAME.	No. of Cars Owned.	RAILROAD COMPANY AND ADDRESS.
1913	*Ables, W. C.....*	76	*Chf. Car Ins. and G. Y. M., Fernwood & Gulf R. R., Fernwood, Miss.*
1900	*Acker, C. L.....*	107	*M. M., Toledo Terminal R. R., Toledo, Ohio.*
1909	Acker, C. B.....	.....	C. F., P. S. & N. Ry., St. Marys, Pa.
1912	Acker, J. J.....	.....	G. C. F., C. R. I. & P. Ry., Horton, Kan.
1896	Adams, T. W.....	.....	G. F., Maine Central R. R., Waterville, Me.
1903	Addis, J. W.....	.....	.....
1914	Akans, E. L.....	.....	M. M., V. & S. W. R. R., Bristol, Va.-Tenn.
1909	Akans, George.....	.....	M. M., Southern Ry., Atlanta, Ga.
1914	Albero, L. H.....	.....	S. A. B., N. Y. C. Lines, W. Albany, N. Y.
1909	Alexander, J. R.....	.....	G. R. F., Penna. R. R., Altoona, Pa.
1912	Alquist, Peter.....	.....	S. C. D., M. K. & T. Ry., Sedalia, Mo.
1906	Alter, Wm.....	.....	G. F. C. D., Cent. R. R. of N. J., Elizabethport, N. J.
1890	Anderson, G. T.....	.....	Chicago, Ill.
1913	*Anderson, J. J.....*	28	*M. M., Chattahoochee Valley Ry., West Point, Ga.*
1911	Andrews, S. B.....	.....	M. E., Seaboard Air Line Ry., Portsmouth, Va.
1912	*Andrus, C.....*	1,000	*Mather Stock Car Co., Chicago, Ill.*
1914	*Angove, C. E.....*	168	*Supt. Great Western Ry., Loveland, Colo.*
1909	*Anthony, F. S.....*	12,118	*S. M., Texas & Pacific Ry., Marshall, Tex.*
1906	Appler, A. B.....	.....	M. E., Delaware & Hudson Co., Watervliet, N. Y.
1896	*Arp, W. C.....*	9,087	*S. M. P., Vandalia Line, Terre Haute, Ind.*
1896	Atterbury, W. W.....	.....	V.-P., Penna. R. R., Philadelphia, Pa.
1887	Augustus, W.....	.....	M. M., K. & W. and C. B. & Q. Rys., Centerville, Iowa.
1910	Ayers, A. R.....	.....	G. M. E., N. Y. C. Lines, West Chicago, Ill.
1914	*Baird, H. B.....*	.....	*Elect. Engr. Hagerstown & Frederick Ry., Frederick, Md.*
1910	Baker, J. H.....	.....	Concordia R. R., Santa Isabel, Arg. Rep.
1913	Barba, C. E.....	.....	Asst. Eng., Penna. R. R., Altoona, Pa.
1913	Barclay, F. B.....	.....	S. M. P., Ill. Cent. R. R., Memphis, Tenn.
1911	Barnes, P. H.....	.....	G. C. F., B. & O. R. R., Zanesville, Ohio.
1899	*Barnum, M. K.....*	9,844	*S. M. P., C. H. & D. Ry., Baltimore, Md.*
1912	Barons, J.....	.....	C. I., K. & I. T. R. R., Louisville, Ky.
1913	Barrett, C. D.....	.....	A. E. M. P., Penna. R. R., Williamsport, Pa.
1907	Barrett, R. W.....	.....	M. C. B., N. & S. Ry., Berkley, Va.
1892	*Bartlett, Henry.....*	28,280	*G. M. S., B. & M. R. R., Boston, Mass.*
1912	*Bawden, Wm.....*	10	*M. M. Wiggins Ferry Co., St. Louis, Mo.*
1912	Baxter, W. M.....	.....	G. C. I. Can. Pac. Ry., Montreal, Que.
1912	*Beaghen, Thos.....*	12,082	*M. C. B., Union Tank Line, New York City.*
1910	Beattie, J. H.....	.....	Supt., McK. Con. R. R., McKeesport, Pa.
1904	Beaumont, H. A.....	.....	G. F. C. S., B. & O. R. R., Baltimore, Md.
1910	*Bell, R. W.....*	65,147	*G. S. M. P., Ill. Cent. R. R., Park Row, Chicago, Ill.*

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Date.	NAME.	No. of Cars. Owned.	RAILROAD COMPANY AND ADDRESS.
1914	*Benham, A.*	405	*G. M., Ohio Electric Ry., Cincinnati, Ohio.*
1912	*Bennett, H. E.*	4	*A. G. M., Charles City West. Ry., Charles City, Iowa.*
1895	Benson, E. A.	.....	M. S., Pullman Co., Chicago, Ill.
1914	Bentley, H. T.	.....	S. M. P. & M., C. & N. W. Ry., Chicago, Ill.
1896	Bentley, W. F.	.....	Dist. M. C. B., B. & O. R. R., Wheeling, W. Va.
1914	*Berg, J. A.*	547	*M. M., Copper Range R. R., Houghton, Mich.*
1914	*Billings, H. A.*	8	*Treas., Grafton & Upton R. R., Hopedale, Mass.*
1906	*Bishop, G. C.*	2,611	*S. M. P., L. I. R. R., Richmond Hill, L. I.*
1913	*Blackmon, G. A.*	7	*Genl. Supt. Lowville & Beaver River R. R., Lowville, N. Y.*
1912	Blair, H. A.	.....	Dist. M. C. B., B. & O. R. R., Pittsburgh, Pa.
1912	*Bock, M. G.*	149	*S. M. P., DeQueen & Eastern R. R., T. O. & E. R. R., De Queen, Ark.*
1911	*Borie, A. J.*	54	*Supt., Boca & L. R. R., Loyalton, Cal.*
1911	Borrowdale, J. M.	.....	S. C. D., Ill. Cent. R. R., Chicago, Ill.
1908	*Bosenbury, J. M.*	1,120	*S. M. P. & E., Ill. Trac. System, Peoria, Ill.*
1912	Bosworth, W. M.	.....	M. E., L. & N. R. R., Louisville, Ky.
1907	Bottomly, Edward S.	.....	C. J. C. I., Martinsburg, W. Va.
1900	Boutet, H.	.....	C. J. I., 71 Carew Bldg., Cincinnati, Ohio.
1914	Bowden, J. F.	.....	D. S. M. P., B. & O. R. R., Wheeling, W. Va.
1909	Boyden, N. N.	.....	M. M., Southern Ry., Knoxville, Tenn.
1912	Boyer, Chas. E.	.....	G. C. I., Penn. R. R., Pittsburgh, Pa.
1911	*Boyle, J. P.*	1	*G. M., Sou. Iowa Trac. Co., Centerville, Iowa.*
1909	Brandt, C. A.	.....	A. M. M., C. C. C. & St. L. Ry., Indianapolis, Ind.
1904	Brassill, J. K.	.....	M. M., Cal.-Nor. West. Ry., Tiburon, Cal.
1893	*Brazier, F. W.*	79,176	*S.R.S., N.Y.C. & H. R. R. R., Grd. Cent. Terminal, N. Y. City*
1909	Bretz, F. K.	.....	G. M., M. & K. R. R., Morgantown, W. Va.
1914	Breyer, J. S.	.....	M. M., Southern Ry., Charleston, S. C.
1909	*Bridges, E. A.*	156	*G. F., D. & S. Ry., Durham, N. C.*
1910	*Bridger, F. J.*	28	*F. C. D., K. L. S. & C. Ry., Kalamazoo, Mich.*
1912	*Brigham, H. H.*	1,000	*Prest., Atlantic Seaboard Desp., Chicago, Ill.*
1813	Brogan, Jas. P.	.....	G. F., D. L. & W. R. R., Hoboken, N. J.
1997	Brooke, G. D.	.....	2742 Bryant ave., Minneapolis, Minn.
1913	Brown, E. L.	.....	C. I., Iowa Transfer Ry., Des Moines, Iowa.
1913	Brown, F. S.	.....	M. E., Erie R. R., Meadville, Pa.
1912	*Brown, J. W.*	.....	*M. C. B., Union Refr. Tran. Co., Milwaukee, Wis.*
1910	*Brown, M. G.*	1,597	*M. M., Gulf & Ship Island R. R., Gulfport, Miss.*
1904	*Brown, T. A.*	1,100	*M. M., L. & A. Ry., Stamps, Ark.*
1914	Brown, W. G.	.....	G. J. F., Boston & Maine R. R., White River Jct., Vt.
1911	Bundy, C. L.	.....	G. F., D. L. & W. R. R., Kingsland, N. J.
1912	Burch, J. J.	.....	D. C. I., Nor. & West. Ry., Roanoke, Va.
1905	Burgis, E. W.	.....	M. M., N. O. S. & G. I. Ry., Algiers, La.
1910	Burgman, C. P.	.....	.....
1914	*Burk, D. T.*	46	*M. C. B., Va. & Truckee Ry., Carson City, Nev.*
1904	*Burnett, R. W.*	98,404	*G. M. C. B., Canadian Pac. Ry., Montreal, Can.*
1913	*Burrill, E. A.*	36	*G. M., Northwestern Ohio Ry. & Power Co., Toledo, Ohio.*
1912	*Burns, T. J.*	27,372	*A. S. M. P., M. C. R. R., Detroit, Mich.*
1904	*Bussing, G. H.*	2,027	*S. M. P. & E. Mex., Nor. Western Ry., Ciudad Juarez, Chih., Mex.*
1914	Bussell, O. D.	.....	G. F. C. D., A. T. & S. F. Ry., San Bernardino, Cal.
1913	Byron, A. W.	.....	M. M., Penna. R. R., Pittsburgh, Pa.

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1908	*Cahill, W. W.....*	71	*Supt., T. & T. R. R., Stagg, Cal.*
1910	Calder, W. W.....	.....	G. F. C. D., B. & O. R. R., Cumberland, Md.
1912	Calkins, A. E.....	.....	A. S. R. S., N. Y. C. & H. R. R. R., New York City.
1912	Callahan, J. P.....	.....	M. C. B., E. J. & E. R. R., Gary, Ind.
1910	Cameron, J. E.....	.....	M. M., K. G. & S. W. Ry., Kentwood, La.
1905	*Campbell, Mart.....*	1,362	*M. C. B., Mexican Ry., Orisaba, V. C., Mexico.*
1914	Carlton, R. V.....	.....	G. C. F., Can. Pac. R. R., Toronto, Ont., Canada.
1908	Carmer, J. R.....	.....	G. F., P. B. & W. R. R., Wilmington, Del.
1904	Carney, J. A.....	.....	Supt. Shops, C. B. & Q. R. R., Aurora, Ill.
1912	*Carothers, W. J.....*	1,497	*G. C. F., M. O. & G. Ry., Muskogee, Okla.*
1889	Carr, W. K.....	.....	G. C. I., N. & W. Ry., Roanoke, Va.
1909	Carroll, J. T.....	.....	A. G. S. M. P., B. & O. R. R., Baltimore, Md.
1902	Carson, G. E.....	.....	D. M. C. B., N. Y. C. & H. R. R. R., West Albany, N. Y.
1895	Carson, H. M.....	.....	G. S., Penna. R. R., Williamsport, Pa.
1910	Carter, T. E.....	.....	G. C. F., M. & E. T. Ry., Marshall, Tex.
1911	Cartwright, David J..	.....	Elec. Engr., L. V. R. R., South Bethlehem, Pa.
1896	Case, S. T.....	.....	M. C. B., N. Y. C. & H. R. R. R., Mott Haven, New York City.
1912	*Cates, L. S.....*	150	*Supt., Ray & Gila Valley Ry., Ray, Ariz.*
1910	Caton, S. W.....	.....	G. C. I., Western Maryland Ry., Hagerstown, Md.
1914	Ccanland, N. B.....	.....	M. M., Md. & Penna. R. R., Baltimore, Md.
1907	Chamberlain, Eugene.	.....	Mgr. Clearing House, N. Y. C. Lines, Grand Central Terminal, New York City.
1910	*Chambers, C. E.....*	23,907	*S. M. P., C. R. R. of N. J., Jersey City, N. J.*
1901	Chambers, J. S.....	.....	Rocky Mountain, N. C.
1912	Chandler, R. L.....	.....	D. G. C. F., N. Y. C. H. R. R. R., New York City.
1889	Charpiot, S. A.....	.....	Point Loma, Cal.
1901	*Clark, F. H.....*	91,953	*G. S. M. P., B. & O. R. R., Baltimore, Md.*
1910	*Clark, J. J.....*	730	*M. M., Tenn. Cent. R. R., Nashville, Tenn.*
1912	Chenowith, E. G.....	.....	M. E., C. R. I. & P. Ry., Chicago, Ill.
1913	Chidley, Jos.....	.....	A. S. M..P., L. S. & M. S. Ry., Cleveland, Ohio.
1914	Chubb, O. J.....	.....	C. I. C. D., Pere Marquette R. R., Detroit, Mich.
1911	*Cochrane, Jno. T.....*	.....	*Prest., Ala. & Northwestern Ry., Mobile, Ala.*
1914	Coddington, H. W...	.....	E. T., N. & W. Ry., Roanoke, Va.
1900	*Coleman, Jas.....*	50,028	*S. C. D., G. T. Ry., Montreal, Can.*
1907	*Colgate, Thos.....*	1,050	*L. & M. Ry., Edwardsville, Ill.*
1912	*Collins, C. F.....*	31	*Aud. Paris & Mt. Pleasant R. R., Paris, Tex.*
1907	Combe, S. W.....	.....	M. C. B., Cuba R. R., Camaguey, Cuba.
1909	Combe, W. B.....	.....	M. M., M. D. & S. R. R., Macon, Ga.
1912	Conniff, P.....	.....	M. M., B. & O. R. R., Connellsville, Pa.
1889	*Connolly, J. J.....*	4,334	*S. M. P., D. S. S. & A. R. R., Marquette, Mich.*
1908	Cook, T. R.....	.....	A. E. M. P., Penna. Lines (West), Pittsburgh, Pa.
1911	Copany, Alfred.....	.....	M. C. B. G. T. Ry., Chicago, Ill.
1897	Corinth, A. B.....	.....	G. I., A. C. L. R. R., Rocky Mount, N. C.
1914	*Corser, C.....*	282	*Supt., Copper River & N. W. Ry., Cordova, Alaska.*
1902	Cota, A. J.....	.....	M. M., C. B. & Q. R. R., Chicago, Ill.
1914	*Coursen, W. L.....*	10	*G. M., Chestnut Ridge Ry., New York City.*
1897	Courson, J. F.....	.....	G. F., Wall Shop, Penna. R. R., Pitcairn, Pa.
1912	*Coutant, G. E.....*	2,720	*M. M. Ann Arbor R. R., Owosso, Mich.*
1904	*Coutant, M. R.....*	259	*M. M., U. & D. R. R., Rondout, N. Y.*

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1912	Covert, M. F.	.....	A. M. C. B., S. R. T. Co., Chicago, Ill.
1913	*Cox, R. G.*	335	*M. M., S. & N. W. R. R., Savannah, Ga.*
1911	*Cox, W. N.*	1,865	*Supt. Mach., A. & W. P, R. R., Montgomery, Ala.*
1907	Craig, Andrew	.....	G. F., B. & M. R. R., Lawrence, Mass.
1908	Craig, James	.....	Chf. Dftsman., B. & M. R. R., No. Un. Sta., Boston, Mass.
1911	*Craig, J. R.*	240	*Can. Copper Co. Ry., Copper Cliff, Ont., Can.*
1900	Crawford, D. F.	.....	G. S. M. P., Penna. Lines, Pittsburgh, Pa.
1914	*Crews, J. S.*	7	*G. M., Elberton & Eastern Ry., Elberton, Ga.*
1904	Cromwell, O. C.	.....	M. E., B. & O. R. R., Baltimore, Md.
1903	Cromwell, S. A.	.....	Supt. Train Supplies, B. & O. R. R., Baltimore, Md.
1914	*Crooks, C. H.*	217	*G. M., Ft. D. D. M. & S. R. R., Boone, Iowa.*
1913	Cross, D. W.	3,139	*M. M., T. St. L. & W. R. R., Frankfort, Ind.*
1914	*Crownover, G. M.*	12,039	*S. M. P., Chicago Great West. Ry., Oelwein, Iowa.*
1905	*Cullinan, John.*	245	*M. M., Central Indiana Ry., Muncie, Ind.*
1913	Cunningham, J. L.	.....	M. M., P. B. & W. R. R. ,Wilmington, Del.
1911	*Curry, H. M.*	46,000	*Mech. Supt., Nor. Pac. Ry., St. Paul, Minn.*
1912	*Cuthbert, F. S.*	150	*M. M., G. F. & A. Ry., Pensacola, Fla.*
1903	Curtis, Theo. H.	.....	Chgo. Assn. of Com., Peoples Gas Bldg., Chicago, Ill.
1911	*Cyr, J. W.*	46,000	*S. M. P., C. B. & Q. R. R., Eastern Lines, Chicago, Ill.*
1914	*Dailey, M.*	12	*G. M., Muscatine North & South Ry., Muscatine, Iowa.*
1912	*Darlow, A. M.*	4,598	*S. M. P., B. & S. R. R., Galeton, Pa.*
1914	*Darrach, C. S.*	850 300	*S. F. T., St. L. & B. E. Ry. and E. St. L. & S. Ry., E. St. Louis, Ill.*
1908	Davis, Geo. G.	.....	S. C. D., C. C. C. & St. L. Ry., Beech Grove, Ind.
1906	*Davis, H. J.*	123	*Supt., St. Clair Ter. R. R., Clairton, Pa.*
1909	Davis, J. H.	.....	El. Eng., B. & O. R. R., Baltimore, Md.
1911	Davis, M. J.	.....	A. E. M. P., Penna. R. R., Altoona, Pa.
1913	Davis, W. H.	.....	M. E., N. Y. O. & W. Ry., Middletown, N. Y.
1900	*Davisson, F. E.*	3,362	*S. M., San Pedro, Los Angeles & Salt Lake, Los Angeles, Cal.*
1911	*Dawson, E.*	94	*M. M., Arizona & New Mexico R. R., Clifton, Ariz.*
1911	Dawson, L. L.	.....	S. M. P., Ft. W. & D. C. Ry., Childress, Tex.
1914	Deats, G. W.	.....	M. M., Tex. & Pac. R. R., Ft. Worth, Tex.
1912	*Dedman, E. J.*	6	*Gen. Mgr., Gainesville & Northwestern R. R., Gainesville, Ga.*
1914	Deeter, D. H.	.....	G. M. M., P. & R. Ry., Reading, Pa.
1905	Deibert, John H.	.....	F. C. R., Lehigh Valley R. R., Buffalo, N. Y
1913	Deitche, J. J.	.....	A. G. F., Pere Marquette R. R., Chicago, Ill.
1900	Demarest, H. N.	.....	G. C. I., Penna. R. R., Williamsport, Pa.
1900	*Demarest, T. W.*	56,170	*S. M. P., Penna. Lines (West), Ft. Wayne, Ind.*
1911	*Dennis, W. B.*	29	*V.-P. and Mgr., Carlton & Coast R. R., Carlton, Ore.*
1901	Deverell, A. C.	.....	Supt. Shops, Great Northern Ry., St. Paul, Minn.
1907	DeVoy, J. F.	.....	A. S. M. P., C. M. & St. P. Ry., West Milwaukee, Wis.
1912	Deyat, Frank.	.....	A. G. F., N. Y. C. & H. R. R. R., Buffalo, N. Y.
1906	*Diaz, M. L.*	280	*Chf. Eng., Havana Central, Havana, Cuba.*
1907	Dickinson, F. W.	.....	M. C. B., Bessemer & Lake Erie R. R., Greenville, Pa.
1906	Dickerson, S. K.	.....	.....
1914	*Dickson, J. G.*	875	*M. M., S. P. & S. Ry., Portland, Ore.*
1912	*Dieman, C. W.*	886	*M. M., G. B. & W. Ry., Green Bay, Wis.*

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Date.	NAME.	No. of Cars Owned.	Railroad Company and Address.
1900	Dillon, S. J.	.....	M. M., Penna. R. R., Camden, N. J.
1914	*Dix, L. E.*	.....	*M. M., Union Ry., Memphis, Tenn.*
1911	*Dobson, W. E.*	1,015	*Gen. Aud., Cambria & Ind. R. R., Philadelphia, Pa.*
1906	*Dodge, R. N.*	330	*F. C. D., Chicago, Milwaukee & Gary Ry., Rockford, Ill.*
1905	*Dolan, J. P.*	793	*M. M., Mo. & No. Arkansas R. R., Eureka Springs, Ark.*
1913	Donehue, Thos.	.....	D. G. C. F., N. Y. C. & H. R. R. R., Avis, Pa.
1910	*Dooley, W. H.*	16,680	*S. M. P., Queen & Crescent Route, Ludlow, Ky.*
1892	Dow, Geo. N.	.....	West Mentor, Ohio.
1905	*Downing, I. S.*	27898	*G. M. C. B., C. C. C. & St. L. Ry., Indianapolis, Ind.*
1892	Doyle, John.	.....	M. C. B., M. K. & T. Ry. Co., Denison, Tex.
1904	Drury, M. J.	.....	Supt. Shops, A. T. & S. F. Ry., Topeka, Kan.
1911	Duffey, G. J.	.....	M. M., Lake Erie & Western Ry., Lima, Ohio.
1906	Dunbar, T.	.....	Mgr., Pullman Co., 830 Pullman Bldg., Chicago, Ill.
1906	Dunham, W. E.	.....	Supr., M. P. & M., Chicago & North Western Ry., Winona, Minn.
1906	*Dunkle, S. K.*	12	*S. M. P., Benwood Wheeling Connecting Rys., Benwood, W. Va.*
1914	*Dunlop, P. T.*	35,409	*G. S. M. P., St. L. & S. F. Ry., Springfield, Mo.*
1910	Dunlap, W. H.	.....	M. M., Louisville & Nashville R. R., Covington, Ky.
1897	*Dunn, J. F.*	10,661	*A. G. M., Oregon Short Line R. R., Salt Lake City, Utah.*
1908	Dyas, Edmund C.	.....	F. C. D., L. & N. R. R., Mobile, Ala.
1912	Dyer, R. H.	.....	D. C. I., Nor. & West. Ry., Portsmouth, Ohio.
1914	*Dyer, W. H.*	615	*M. M., Ga. & Fla. R. R., Douglas, Ga.*
1905	Eberle, Wm. F.	.....	G. F., Penna. R. R., Altoona, Pa.
1894	Eddy, F. H.	.....	G. F. C. D., B. & M. R. R., East Fitchburg, Mass.
1895	Eckhart, J., Jr.	.....	64 N. State st., Salamanca, N. Y.
1912	Egbers, G. F.	.....	M. M., N. P. R. R., Pasco, Wash.
1914	Eley, E.	.....	D. C. F., Can. Pac. Ry., North Bay, Ont., Canada.
1911	Elliott, B. F.	.....	M. C. B., United Railways of Havana, Havana Central Ry, Luyano, Havana, Cuba.
1903	*Elmer, Wm.*	10,000	*S. M. P., Penna. Ry. (B. & A. V. Div.), Buffalo, N. Y.*
1903	*Emerson, G. H.*	56,099	*A. G. M., Great Northern Ry., St. Paul, Minn.*
1914	England, R. H.	.....	G. M., K. & W. Va. Ry., Charleston, W. Va.
1909	*England, Robt. H.*	50	*V.-P. & G. M., Central Ry. of Oregon, Union, Ore.*
1908	*Enright, J. F.*	20,328	*S. M. P. & C. D., D. & R. G. R. R.; Western Pacific Ry., Denver, Colo.*
1914	*Epler, J. E.*	26,212	*S. M. P., C. & E. I. R. R., Danville, Ill.*
1904	Ettinger, R. L.	.....	C. M. E., Southern Ry. Co., Washington, D. C.
1914	Evans, G. I.	.....	S. L. S., Can. Pac. Ry., Montreal, Que., Canada.
1905	Everett, Ira.	.....	G. C. I., Lehigh Valley R. R., So. Bethlehem, Pa.
1911	*Everett, P. S.*	996	*M. C. B., Butte, Anaconda & Pacific R. R., Anaconda, Mont.*
1914	*Ewald, Wm.*	1,800	*S. M. P., Cumb. & Penna. R. R., Mt. Savage, Md.*
1900	Ewing, J. J.	.....	M. E., C. & O. R. R., Richmond, Va.
1909	Fay, A. R.	.....	V.-P., St. Paul Bridge & Ter. Ry., Chicago, Ill.
1913	Felton, Henry E.	.....	Prest., Union Tank Line Co., 26 Broadway, New York City.
1905	*Ferguson, Geo. M.*	373	*Supt., Lake Ter. R. R., Lorain, Ohio.*
1908	Ferguson, T. G.	.....	Wks. Mgr., Cordova Cent. Ry., Lallers, Cordova, Arg. Rep.

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1910	*Fick, J. B.*	320	*Aud., Tremont & Gulf Ry., Winnfield, La.*
1907	*Field, A. G.*	137	*Aud., Parral & Durango R. R., Parral, Mex.*
1912	Finley, J. B.	.....	Asst. Gen. Supt., So. Pac. R. R. of Mex., Empalme, Sonora, Mexico.
1911	Finnegan, L. E.	.....	D. M. M., B. & O. R. R., Glenwood, Pittsburgh, Pa.
1913	Fisher, W. J.	.....	G. C. I., St. L. & S. F. Ry., Springfield, Mo.
1905	Fite, J. T.	.....	G. C. F., El Paso & South Western Rys., El Paso, Tex.
1901	Fitzmorris, James.	.....	M. M., Chicago Junction Ry., Chicago, Ill.
1913	FitzSimmons, E. S.	.....	M. S., Erie R. R., Cleveland, Ohio.
1914	*Flavin, J. T.*	9,494	*M. M., Chicago, Indiana & So. R. R., Gibson, Ind.*
1912	*Fleishel, M. L.*	127	*Gen. Mgr., Gulf & Sabine River R. R., Fullerton, La.*
1904	*Flory, B. P.*	7,488	*S. M. P., N. Y. O. & W. Ry., Middletown, N. Y.*
1913	Flynn, W. H.	.....	S. M. P., Mich. Central R. R., Detroit, Mich.
1902	*Fogg, J. W.*	825	*M. M., B. & O. R. R., Chicago Term. R. R., E. Chicago, Ind.*
1901	*Foque, T. A.*	27,283	*M. S. M., St. P. & S. S. M. Ry., Minneapolis, Minn.*
1912	*Forster, W. D.*	165	*Supt., T. & G. Ry., Goldfield, Nev.*
1904	Foster, W. T.	.....	Supt., Tenn. Cop. Co. Ry., Copper Hill, Tenn.
1914	*Fowler, H. B.*	70	*M. M., F. & G. L. Coal & Ry. Co., Chipman, N. B., Can.*
1895	Fox, Frank L.	.....	29 Commonwealth ave., Detroit, Mich.
1912	Fox, Geo. P.	.....	D. G. C. F., N. Y. C. & H. R. R. R., Albany, N. Y.
1913	Francis, N. A. C.	.....	G. C. I., Boston & Albany R. R., Allston, Mass.
1911	*Franke, J. H.*	50	*Supt., Peoria Ry. Term. Co., Peoria, Ill.*
1911	*Fraser, Jas. S.*	.....	*Pittsburgh & Ohio Valley Ry., Pittsburgh, Pa.*
1912	*Fraser, Thos.*	1,408	*M. C. B., Algoma Cent. & Hudson Bay R. R. and Algoma East. Ry., Sault Ste. Marie, Ont., Can.*
1914	Freeman, J. D.	.....	G. F. C. D., Sunset Cent. Lines, Houston, Tex.
1908	*Freshman, S. D.*	66	*A. G. M., Sierra Ry. of California, Jamestown, Cal.*
1913	*Frierson, Meade.*	55	*Gen. Mgr., Middle Tennessee R. R., Nashville, Tenn.*
1904	Fries, A. J.	.....	A. S. M. P., N. Y. C. & H. R. R. R., Depew, N. Y.
1914	*Fries, W. F.*	1,019	*M. C. B., Live Poultry Transit Co., Chicago, Ill.*
1897	Friese, N. L.	.....	G. F., N. & W. Ry., Roanoke, Va.
1908	Fritts, J. C.	.....	M. C. B., D. L. & W. R. R., Scranton, Pa.
1913	*Frye, A. D.*	133	*Piedmont & Northern Lines, Anderson, S. C.*
1910	Fryer, C. U.	.....	G. F. C. D., N. Y. O. & W. Ry., Middletown, N. Y.
1903	*Fuller, C. E.*	28,062	*S. M. P. & M., U. P. R. R., Omaha, Neb.*
1890	*Gage, C. M.*	2,105	*G. M., H. & B. T. M. R. R., Huntington, Pa.*
1900	*Gaines, F. F.*	10,130	*S. M. P., Cent. of Ga. Ry., and Ga. Nor. Ry., Savannah, Ga.*
1914	*Gallagher, G. A.*	425	*M. M., Ill. So. Ry., Sparta, Ill.*
1907	*Gano, J. H.*	1	*Supt., Aliquippa & Southern R. R., Woodlawn, Pa.*
1914	Gardner, G. C.	.....	A. E. M. P., Penna. R. R., Buffalo, N. Y.
1914	*Garrison, L. D.*	15	*A. G. M., Moscow, Camden & S. A. R. R., Camden, Tex.*
1908	*Gaskill, C. S.*	.....	Asst. Engr. M. P., P. B. & W. R. R., Wilmington, Del.
1904	Gauthier, J.	.....	1021 Banks ave., Superior, Wis.
1914	*Geddes, D. Y.*	208	*Supt., Ohio River & West. Ry., Zanesville, Ohio.*
1906	Geesey, Roy W.	.....	Insp., Penna. R. R. Co., Altoona, Pa.
1911	*Gemmell, R. C.*	534	*A. G. M., B. & G. R. R., Salt Lake City, Utah.*
1913	Gernert, Henry	.....	F. C. D., Central R. R. of N. J., Elisabethport, N. J.

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Date.	NAME.	No. of Cars. Owned.	RAILROAD COMPANY AND ADDRESS.
1891	Gibbs, A. W.....	.....	C. M. E., Penna. R. R. Co., Philadelphia, Pa.
1890	Gibbs, Geo.....	.....	C. E., Penna. Tun. & Ter. R. R., Penna. Sta., New York City.
1914	Gibson, A. J.....	.....	M. C. R., Southern Pacific Co., Sacramento, Cal.
1912	Gilbert, E. A.....	.....	G. I. M. P. D., So. Pac. Ry., San Francisco, Cal.
1911	*Giles, C. F.*.....	46,302	*S. M., L. & N. R. R., Louisville, Ky.*
1905	Gilman, G. H.....	.....	M. C. B., Nor. Pac. Ry., St. Paul, Minn.
1913	*Gillespie, W*.....	3,600	*M. C. B., Central Vermont Ry., St. Albans, Vt.*
1914	*Gillingham, G.*.....	495	*M. C. B., Dominion At. Ry., Kentville, N. S., Can.*
1913	Givin, E. F.....	.....	M. M., P. S. & N. R. R., St. Marys, Pa.
1903	Glover, G. T.....	.....	C. M. E., Great Northern Ry., Dundalk, Ireland.
1908	*Goodnow, T. H*.....	65,728	*A. S. C. D., C. & N. W. Ry., Chicago, Ill.*
1907	*Goodrich, G. P*.....	1,400	*M. M., Ft. Smith & Western R. R., Ft. Smith, Ark.*
1909	*Gordon, J. R*.....	49	*Traffic Mgr., Brimstone R. R. & Canal Co., New York, N. Y.*
1909	Gorey, E. H.....	.....	G. F., Louisville & Nashville R. R., Paris, Ky.
1897	Gorrell, W. T.....	.....	M. C. B., P. & R. Ry., Reading, Pa.
1912	Gosnell, C. B.....	.....	G. C. F., Morgantown & Kingwood R. R., Morgantown, W. Va.
1912	*Gould, J. R*.....	44,374	*G. S. M. P., C. & O. Ry., Richmond, Va.*
1898	Gould, Robt.....	.....	Pinecroft-Pyrford, near Woking, England.
1911	*Graburn, A. L*.....	27,613	*M. E., Can. Northern Ry., and Inverness Ry. & Coal Co., Toronto, Ont., Can.*
1914	Graff, F. M.....	.....	S. A. M. D., Erie R. R., New York City.
1910	*Graham, H. E*.....	133	*V.-P., Pittsburgh, Allegheny & McKee's Rocks R. R., McKee's Rocks, Pa.*
1895	*Graham, J. F*.....	8,907	*S. M. P., Ore. Ry. & Nav. Co., Portland, Ore.*
1908	*Gray, B. H*.....	1,935	*S. M. P., N. O. M. & C. Ry., Mobile, Ala.*
1906	*Gray, G. M*.....	10,049	*S. M. P., Bessemer & Lake Erie R. R., Greenville, Pa.*
1912	*Gray, H. A*.....	50	*Supt., D. & I. M. R. R., Denver, Colo.*
1889	Greatsinger, J. L.....	.....	164 Montague St., Brooklyn, N. Y.
1904	Greaven, Louis.....	.....	S. M. P., Buenos Aires Great Southern R. R., Buenos Aires, Arg. Rep., S. A.
1913	*Green, J. H*.....	369	*M. M., Halifax & Southwestern Ry., Bridgewater, N. S., Canada.*
1912	*Gregory, C. F*.....	1,277	*M. M., Manufacturers Ry. of St. Louis; St. Louis and O'Fallon, St. Louis, Mo.*
1910	*Grewe, H. F*.....	25	*M. M., Wabash Pittsburgh Ter. Ry., Carnegie, Pa.*
1914	Griffin, H. G.....	.....	G. C. I., Can. Pac. Ry., Montreal, Que., Canada.
1910	Grove, P. L.....	.....	M. M., Penna. R. R., Sunbury, Pa.
1914	Grove, W. E.....	.....	I. C. D., P. & R. Ry., Reading, Pa.
1914	*Grundy, G. G*.....	139	*G. M., Temiscouata Ry., Riviere-du-Loup, P. Q. Can.*
1913	*Guthridge, E. F*.....	47	*Aud., Chicago & Calumet River R. R., Hegewisch, Ill.*
1914	Hagen, Chas.....	.....	G. F. C. D., W. & L. E. R. R., E. Toledo, Ohio.
1913	Haig, M. H.....	.....	M. E., A. T. & S. F. Ry., Topeka, Kan.
1910	*Hainen, J*.....	52,978	*G. S. M. P., Southern Ry.; Virginia & So. Western Ry., Northern Alabama R. R., Washington, D. C.*
1913	*Hale, O. R*.....	127	*M. M., Cananea Con. Copper Co.'s Ry., Cananea, Sonora, Mexico.*

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1913	Halbert, M. W.....	.....	Chief Interchange Inspector, E. St. Louis, Ill.
1907	Hall, W. H.....	.....	C. C. Insp., C. R. R. of N. J., Jersey City, N. J.
1911	Halvorsen, Harvey...	.....	M. C. B., Chicago Div. Soo Line, Fond du Lac, Wis.
1907	*Hamilton, Tabor*.....	674	*M. M., Cumberland Valley R. R., Chambersburg, Pa.*
1902	*Hammett, P. M*.....	9,532	*S. M. P., Me. Cent. R. R., Portland, Me.*
1912	Hampton, J. N.....	.....	F. C. D., A. C. L. R. R., Waycross, Ga.
1909	Hardic, Henry.....	.....	M. M., Louisville & Nashville R. R., Howell, Ind.
1914	Harding, E. N.....	.....	G. P. I., Ill. Cent. R. R., Chicago.
1913	Harris, C. M.....	.....	M. M., Washington Terminal Co., Washington, D. C.
1912	Harris, H. Y.....	.....	M. M., Tampa Northern R. R., Tampa, Fla.
1894	Harris, Wells.....	.....	G. F. C. R., N. Y. N. H. & H. R. R., New Haven, Conn.
1910	*Harrison, F. J*.....	17,841	*S. M. P., B. R. & P. Ry., Dubois, Pa.*
1907	*Hartley, C. H*.....	79	*G. M., Wisconsin & Northern R. R., Oshkosh, Wis.*
1910	Hartman, F. B.....	.....	Gen. Equipment Insp., So. Ry., Washington, D. C.
1913	Hartman, W. J.....	.....	Air Brake Inspector, Rock Island Lines, Chicago, Ill.
1913	Harvey, H. H.....	.....	G. C. F., C. B. & Q. R. R., Chicago, Ill.
1907	Hayes, A. C.....	.....	G. C. F., N. Y. C. Lines, 185 Thompson st., Springfield, Mass.
1914	*Heckle, A. M*.....	17	*Supt., Franklin & Pittsylvania R. R., Rocky Mount, Va.*
1912	Hedgecock, E. S.....	.....	Asst. to S. M., L. & N. Ry., Lousville, Ky.
1909	*Heintzelman, T. W.*..	40,331	*G. S. M. P., So. Pac. Co., San Francisco, Cal.*
1909	*Helbig, O. H*.....	72	*T. M., Prescott & N. W. R. R., Prescott, Ark.*
1911	Hellman, Chas.....	.....	C. F., P. S. & N. Ry., St. Marys, Pa.
1913	*Hemphill, J. J*.....	220	*N. O., Natalbany & Natchez Ry., Hammond, La.*
1909	Hendry, John.....	.....	M. C. B., Grand Trunk Ry. System, Montreal, Can.
1890	*Hennessey, J. J*.....	67,725	*M. C. B., C. M. & St. P. Ry., C. M. & P. S. Ry., Idaho & Wash. Northern R. R., Milwaukee, Wis.*
1912	*Henry, J. M*.....	10,000	*S. M. P., Penna. R. R., Pittsburgh, Pa.*
1907	*Henry, W. C. A*.....	30,761	*Supt. M. P., Penna. Lines, West, Columbus, Ohio.*
1914	*Herbert, J. M*.....	41	*Colo., Wyo. & East. Ry., Laramie, Wyo.*
1913	*Herman, A. O*.....	.....	*G. F. C. D., Panama Canal, Balboa, Canal Zone.*
1914	*Herrold, A. E*.....	663	*M. C. B., Monongahela Connecting R. R., Pittsburgh, Pa.*
1911	*Hess, G. F*.....	6,776	*Supt. Mach., Kan. City Sou. Ry., Pittsburg, Kan.*
1912	Hessenbruch, T. E...	.....	G. I., Phila. & Reading Ry., Reading, Pa.
1914	*Hickey, J*.....	78	*M. E., Nevada Copper Belt R. R., Salt Lake City, Utah.*
1892	Higgins, Samuel.....	.....	New Haven, Conn.
1903	Hill, Rufus.....	.....	Moorestown, Burlington Co., N. J.
1907	Hills, H. S.....	.....	M. M., Louisville & Atlantic R. R., Richmond, Ky.
1912	*Hillyer, W. J*.....	.....	*Supt., Ark., La & Gulf Ry., Monroe, La.*
1912	*Hiltabidle, J. C*.....	604	*Buffalo Creek & Gauley Ry., Clay, W. Va.*
1891	*Hodgson, J. L*.....	16,583	*M. C. B., Grand Trunk Pac. R. R., Transcona, Man., Can.*
1910	*Hogarth, Wm*.....	1,420	*Cudahy Ref. & Tank Lines, South Omaha, Neb.*
1908	Hogsett, J. W.....	.....	C. J. C. I., Ft. Worth, Tex.
1909	Hoke, H. A.....	.....	Asst. Eng., Penn. R. R., Altoona, Pa.
1901	Holland, J. P.....	.....	C. F., C. & N. W. Ry., Milwaukee, Wis.
1909	*Home, E. S*.....	18	*East Kootenay Logging Ry. Co., Jaffray, B. C., Can.*
1913	*Hopper, Frank*.....	1,341	*M. M., Duluth, Winnipeg & Pacific, Winnipeg, Man., Can.*
1898	*Horrigan, John*.....	11,954	*S. M. P., E. J. & E. Ry., Joliet, Ill.*
1912	*Horton, E. K*.....	214	*Supt., Pullman R. R., Chicago, Ill.*
1904	Howard, John.....	.....	S. M. P., N. Y. C. & H. R. R. R., Grand Central Terminal, New York, N. Y.

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1914	*Howard, L. L.....*	17	*T. M., Waycross & West. R. R., Waycross, Ga.*
1914	*Howard, V. H.....*	19	*A. to P., Artesian Belt R. R., San Antonio, Tex.*
1909	Howson, G. N.....	.....	M. M., Southern Ry., Princeton, Ind.
1908	*Huckin, A. G.....*	42	*Deering Southwestern Ry., Harvester Bldg., Chicago, Ill.*
1900	Hughes, John A.....	.....	M. C. B., Oahu R. R. & L. Co., P. O. Box. 201, Honolulu, H. I.
1914	Hundley, W. M.....	50	Supt. Aransas Harbor Terminal Ry., Aransas Pass, Tex.
1914	*Hunt, G. B.....*	.....	*T. M., Michigan Ry. Co., Jackson, Mich.*
1914	*Hyland, W. V.....*	35	*Supt., Ligonier Valley R. R., Ligonier, Pa.*
1914	*Hyndman, F. T.....*	11,789	*S. M. P. & C., Wheeling & Lake Erie R. R., Brewster, Ohio*
1908	*Irvin, B. I.....*	1,206	*M. M., C. & W. C. Ry., Augusta, Ga.*
1911	*Jackson, O. S.....*	8,533	*S. M. P., C. T. H. & S. E. Ry., Terre Haute, Ind.*
1914	*Jacobs, L. M.....*	.....	*M. M., Houston Belt & Term. Ry., Houston, Tex.*
1906	James, Ed. T.....	.....	34 W. Broadway, Mauch Chunk, Pa.
1914	*James, W. S.....*	2	*A. G. M., R. S. & P. Ry., Roscoe, Tex.*
1911	Jansen, E. W.....	.....	Elect. Eng., Ill. Cent. R. R., Chicago, Ill.
1911	Jaynes, R. T.....	.....	M. M., L. & H. R. Ry., Warwick, N. Y.
1910	Johnson, Frank.....	.....	M. M., Southern Ry., Birmingham, Ala.
1910	Johnson, J. O.....	.....	Foreman Car Repairs, Southern Ry., Columbia, S. C.
1914	*Johnson, N.....*	29	*W. M. W. & N. W. Ry., Weatherford, Tex.*
1914	*Johnson, W. H.....*	237	*Supt., Winston-Salem So. Bound Ry., Winston-Salem, N. C.*
1913	Jones, L. B.....	.....	A. E. M. P., Penna. Lines (West), Toledo, Ohio.
1895	*Joughins, G. R.....*	14,124	*S. M. P., Intercolonial Ry.; International Ry. of N. B., Moncton, N. B., Can.*
1904	Julien, B.....	.....	G. C. F., Union Pacific R. R., Omaha, Neb.
1913	*Jungling, M.....*	1,400	*M. M., New Orleans Gt. Nor. R. R., Bogalusa, La.*
1914	Justus, I. J.....	.....	G. C. I., N. Y. C. Lines, New York City.
1902	*Kaderly, W. F.....*	2,675	*S. M. P., G. S. & F. Ry., St. Johns River Terminal Co., H. & F. S. Ry., Macon, Ga.*
1901	*Kalbaugh, I. N.....*	2,181	*S. M. P., Coal & Coke Ry., Gassaway, W. Va.*
1903	*Kapp, W. F.....*	608	*S. S. and M., R. F. & P. Ry., Washington Southern Ry.. Richmond, Va.*
1914	*Kautzky, R. H.....*	24	*M. M., Des Moines Union Ry., Des Moines, Iowa.*
1903	Keagy, C. O.....	.....	G. F., Penn. R. R., W. Philadelphia, Pa.
1894	Kearney, A.....	.....	A. S. M. P., N. & W. Ry., Roanoke, Va.
1894	*Keegan, J. E.....*	3,502	*S. M. P., G. R. & I. Ry., Grand Rapids, Mich.*
1903	*Kehrman, J. F.....*	1,182	*M. M., Miss. Riv. & B. T. Ry., Bonne Terre, Mo.*
1910	Keiser, C. B.....	.....	M. M., Penn. R. R. (Pa. Term. & Tun. Div.), Penn. Station, New York, N. Y.
1911	*Kelley, M. J.....*	108	*Supt., C. W. P. & S. Ry. and Ill. Nor. Ry., 26th st. and Western ave., Chicago, Ill.*
1906	*Kellogg, W. L.....*	26,751	*S. M. P., M. K. & T. Ry., Denison, Tex.*
1896	Kells, Willard.....	.....	A. to G. S. M. P., Atlantic Coast Line R. R., Wilmington, N. C.

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1914	Kelly, J. P.	.....	C. A. B. E., N. Y. C. & H. R. R. R., New York City.
1905	Kendig, R. B.	.....	C. M. E., N. Y. C. Lines, New York, City.
1890	Kent, F. S.	.....	G. C. I., Penn. R. R., New York City.
1901	Keyworth, T. E.	.....	L. & C. D., Cuban Cent. Ry., Sagua la Grande, Cuba.
1901	Kiesel, W. F., Jr.	.....	A. M. E., Penna. R. R., Altoona, Pa.
1909	*Kilpatrick, H. R.*	44	*G. M., D. K. & S. Ry., Kensett, Ark.*
1906	Kimmett, M. A.	.....	G. F. Car. Dept., C. R. R. of N. J., Ashley, Pa.
1914	*King, A.*	17	*Supt., Canton R. R., Canton, Baltimore, Md.*
1911	*Kinney, M. A.*	12,987	*S. M. P., Hocking Valley Ry., Columbus, Ohio.*
1908	Kinter, D. H.	.....	G. F. C. D., Monongahela R. R., Brownsville, Pa.
1910	Kipp, A.	.....	G. C. I., N. Y. O. & W. Ry., Middletown, N. Y.
1909	Kipp, A. R.	.....	M. S., M. St. P. & S. S. M., Fond du Lac, Wis.
1903	Kleine, R. L.	.....	G. C. I., Penn. R. R., Altoona, Pa.
1907	Knapp, D. F.	.....	G. C. F., So. Pac. Co., Portland, Ore.
1906	Knight, W. E.	.....	S. M. P. & S., Cuba R. R., Camaguey, Cuba.
1913	Knowlton, W. V.	.....	A. C. L. R. R., Rocky Mount, N. C.
1910	Knox, W. J.	.....	M. E., B. R. & P. Ry., Du Bois, Pa.
1911	*Koeppen, L. J.*	507	*M. M. C. & I. W. R. R., Hawthorne, Ill.*
1911	*Krebs, R. H.*	8	*Potato Creek R. R., Norwich, Pa.*
1903	*Kucher, T. N.*	1, 798	*M. M., T. P. & W. Ry., Peoria, Ill.*
1911	*Kuhn, W. T.*	1,558	*S. M. P., T. H. & B. Ry., Hamilton, Ont., Can.*
1914	*Kuykendall, H. O.*	611	*Texas Short Line Ry., Grand Saline, Tex.*
1912	*Lamb, E. D.*	600	*Akron, Canton & Youngstown Ry., Akron, Ohio.*
1911	*Lamb, O. S.*	150	*W. C. F. & N. Ry., Waterloo, Iowa.*
1907	La Mar, A.	.....	M. M., Penn. Lines, Chicago, Ill.
1903	LaRue, H.	.....	7117 Princeton ave., Chicago, Ill.
1909	Lauder, J. S.	.....	G. F. C. D., L. & N. Ry., S. Louisville, Ky.
1912	*Laughlin, Geo. F.*	14,100	*S. C. D., Armour Car Lines, Chicago, Ill.*
1914	Laux, J. P.	.....	M. M., Lehigh Valley R. R., Hasleton, Pa.
1896	Lawes, T. A.	.....	M. E., N. Y. C. & St. L. Ry., Cleveland, Ohio.
1911	*Lawlor, J. W.*	17	*Sec., Pac. & East. Ry., Medford, Ore.*
1879	*Lentz, John S.*	47,467	*M. C. B., Lehigh Valley R. R., So. Bethlehem, Pa.*
1911	*Leonard, E. J.*	1,010	*United Coal Co., Boswell, Pa.*
1911	*Levesque, Geo. F.*	1,553	*M. M., Q. M. & So. Ry., Sorel, Que., Can.*
1905	Lewis, H. L.	.....	F. C. S., Del. & Hud. Co., Norwich, N. Y.
1913	*Lewis, M. W.*	170	*M. M., Okla. Cent. Ry., Purcell, Okla.*
1889	*Lewis, W. H.*	48,258	*S. M. P., N. & W. Ry., Roanoke, Va.*
1909	Leyonmark, J. H.	.....	M. E., C. & A. R. R., Bloomington, Ill.
1908	*Libby, J. E.*	8,000	*M. C. B., Swift Ref. Trans. Co., U. S. Yds., Chicago, Ill.*
1913	Lide, C. D.	.....	M. M., Carolina & N. W. R. R., Hickory, N. C.
1914	*Lilley, B. F.*	800	*G. C. F., St. L. B. & M. Ry., Kingsville, Tex.*
1912	*Lillie, E. E.*	433	*Supt., Spokane & Inland Empire R. R., Spokane, Wash.*
1907	Lillie, G. W.	.....	M. S., Rock Island Lines, Topeka, Kan.
1910	Lindstrom, C. A.	.....	C. Eng., P. A. & McK. R. Ry., McKee's Rocks, Pa.
1914	*Lisman, O. C.*	31	*V.–P., Kan. City & Memphis Ry., Rogers, Ark.*
1912	Littell, C. N.	.....	G. F., St. Louis Refr. Car Co., St. Louis, Mo.
1914	Little, J. C.	.....	M. E., C. & N. W. Ry., Chicago.

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1911	*Little, Robt. B.*	228	*V.-P., G. & P. R. R., Machesney Bldg., Pittsburgh, Pa.*
1912	*Lloyd, H. S.*	225	*M. M., T. A. & G. Ry., Alton Park, Tenn.*
1913	*Lloyd, M. M.*	65	*M. M., Inter-Urban Ry., Des Moines, Iowa.*
1913	*Logan, R. A.*	216	*M. M., Denver, Laramie & Northwestern, Denver, Colo.*
1913	*Long, F. L.*	4	*Supt., Elkin & Allegheny Ry., Elkin, N. C.*
1913	Looney, W. E.	.....	C. F., M. O. & G. Ry., Denison, Tex.
1914	*Love, H. T.*	.....	*V.-P., S. A. F. & N. Ry., Fredericksburg, Tex.*
1913	*Lovejoy, Geo. R.*	42	*G. F., Detroit Terminal R. R., Detroit, Mich.*
1911	*Lower, M. J.*	43	*A. G. M., Owasco River Ry., Auburn, N. Y.*
1910	Luscombe, J. T.	.....	M. M., B. & O. R. R., Parkersburg, W. Va.
1909	Lynn, Samuel	.....	M. C. B., P. & L. E. R. R., McKee's Rocks, Pa.
1910	*MacBain, D. R.*	59,962	*S. M. P., L. S. & M. S. Ry., Cleveland, Ohio.*
1914	*MacDonald, W. D.*	60	*Springfield Ry. Co., Crossburn, Annapolis Co., N. S., Can.*
1914	MacFarland, H. B.	.....	E. T., A. T. & S. F. Ry., Chicago, Ill.
1913	Macha, J. H.	.....	F. C. D., Texas & Pac. Ry., Port Allen, La.
1913	Maddox, C. W.	.....	C. C. I., Ches. & Ohio Ry., Richmond, Va.
1914	*Maginn, J. J.*	1,101	*G. F. S., Cincinnati Nor. R. R., Van Wert, Ohio.*
1895	Mahl, F. W.	.....	Dir. of Pur., So. Pac. Co., 165 Broadway, New York.
1913	*Mahon, B. L.*	108	*Memphis, Dallas & Gulf Ry., Nashville, Ark.*
1912	Malott, F. W.	.....	Shop Supt., N. P. Ry., S. Tacoma, Wash.
1906	Malthaner, W.	.....	M. M., D. & H. Col., Green Island, N. Y.
1907	Manchester, A. E.	.....	S. M. P., C. M. & St. P. Ry., West Milwaukee, Wis.
1911	*Manchester, H. C.*	29,000	*S. M. P., Del. Lack. & West. R. R., Scranton, Pa.*
1904	Mandeville, H.	.....	G. F. C. D. Pass. Cars, Penn. R. R. Co., Sunnyside Yards, Long Island, N. Y. City.
1910	*Maness, W. C.*	19,853	*M. C. B., Nat. Rys. of Mex., Aguascalientes, Mex.*
1914	*Manley, C.*	1,552	*S. M. P. & M., Tehauntepec National R. R., Rincon, Antonio, Mexico.*
1895	*Manning, J. H.*	18,914	*S. M. P., Del. & Hud. Co., Watervliet, N. Y.*
1901	Marchbanks, J.	.....	Engr., Wellington Harbour Board, Wellington, N. Z.
1908	*Marea, M.*	837	*G. S., St. L. T. & E. R. R., St. Louis, Mo.*
1903	Marden, J. E.	.....	G. F. M. P., Portland Terminal Co., So. Portland, Me.
1912	*Marsh, H. W.*	1,000	*Gen. Mgr., Milwaukee Ref. Trans. & Car. Co., Milwaukee, Wis.*
1908	Martin, John C.	.....	F. C. D., L. & N. R. R., Howell, Ind.
1906	Martin, J. H.	.....	Supt. Car Ser., Berwaid White Min. Co., 305 Bets Bldg., Philadelphia, Pa.
1911	*Massey, R. V.*	2,148	*Supt., N. Y. P. & N. Ry., Cape Charles City, Va.*
1898	Mather, A. C.	.....	Pres., Mather Stock Car Co., 1320Marquette Bldg., Chicago, Ill.
1912	*Maupin, J. D.*	2,037	*S. M. P. & E., T. & B. V. Ry., Teague, Tex.*
1912	Maxfield, H. H.	.....	M. M., Penn. R. R., Pittsburgh, Pa.
1913	*Maxwell, G. M.*	.....	*Midland Continental Ry., Jamestown, N. D.*
1909	*May, H. C.*	7,225	*S. M. P., C. I. & L. R. R., Lafayette, Ind.*
1913	*McAnnis, W. H.*	258	*M. M., Charlotte Harbor & Northern R. R., Arcadia, Fla.*
1914	McBride, B.	.....	M. M., Southern Ry., Columbia, S. C.
1913	*McCann, E. H.*	68	*M. M., Cape Girardeau Nor. Ry., Cape Girardeau, Mo.*
1913	*McCarra, M. F.*	1,403	*M. M., Louisiana Ry. & Nav. Co., Shreveport, La.*

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Date.	NAME.	No. of Cars Owned.	RAILROAD COMPANY AND ADDRESS.
1913	*McCarthy, C. A.....*	854	*M. M., Florence & Cripple Creek Ry., Midland Termina R. R., Colorado Springs, Colo.*
1914	*McClure, J. C.....*	357	*A. P., Ariz. East. R. R., Tucson, Ariz.*
1891	McConnell, J. H....	.....	168 N. Sycamore st., Hollywood, Cal.
1912	McConville, H. A....	.....	I. F. C. R., L. & N. R. R., New Decatur, Ala.
1913	*McCormick, Geo.....*	20,993	*A. G. M., Sunset Central Lines, Houston, Tex.*
1895	McCuen, J. P.....	.....	Gen. Insp., Q. & C. Route, Ludlow, Ky.
1903	*McCullogh, W. G.....*	460	*C. W. V. & S. R. R., Hendricks, Va.*
1910	McCully, B. N.....	.....	F. C. D., N. Y. P. & N. Ry., Cape Charles, Va.
1908	*McDonald, H. M.....*	284	*S. C. S., Washington Run R. R., Dawson, Pa.*
1903	McDonnel, P.....	.....	1404 Benton blvd., Kansas City, Mo.
1914	*McEnroe, P. M.....*	166	*S. M. P., Tex. So. East. R. R., Diboll, Tex.*
1907	*McFarland, W. W....*	250	*G. M., D. R. & U. R. R., Philadelphia, Pa.*
1904	*McFeatters, F. R.....*	6,090	*Supt., Union R. R., Port Perry, Pa.*
1908	McGee, W. J.....	.....	M. M., Tampa Nor. Ry., Tampa, Fla.
1911	*McGraw, Wm. P.....*	1,500	*Supt. Cars, Jamison Coal & C. Co., Pittsburgh, Pa.*
1910	McGregor, A. A.....	.....	M. M., L. & N. R. R., Louisville, Ky.
1907	McIlvaine, C. L.....	.....	M. M., N. Y. P &. N. R. R., Cape Charles, Va.
1914	*McKee, G. S.....*	3,077	*S. M. P., S. A. & A. P. Ry., San Antonio, Tex.*
1893	McKeen, Jr., W. R...	.....	C. E. of Motor Cars, Un. Pac. Shops, Omaha, Neb.
1910	McKinsey, C. R.....	.....	G. C. I., P. B. & W. Ry., Wilmington, Del.
1905	*McLeod, Thomas R...*	987	*M. M., Can. Nor. Ont. Ry., Toronto, Ont., Can.*
1914	*McLellan, E. E.....*	34	*G. S., S. B. & R. G. V. Ry., San Benito, Tex.*
1894	McMaster, C. J.....	.....	14 Pine st., Rutland, Vt.
1913	McMullen, John.....	.....	M. S., Erie R. R., Meadville, Pa.
1914	McQuillen, J. E.....	.....	M. S., G. C. & S. F. R. R., Cleburne, Tex.
1905	McRae, J. A.....	.....	M. E., Mich. Cent. R. R., Detroit, Mich.
1914	Mehan, J. E.....	.....	A. M. C. B., C. M. & St. P. Ry., W. Milwaukee, Wis.
1913	Meister, C. L.....	.....	M. E., Atlantic Coast Line Ry., Wilmington, N. C.
1909	Meloy, H. C.....	.....	C. E., L. S. & M. S. Ry., Cleveland, Ohio.
1907	Mengel, John C.....	.....	M. M., Penna. R. R., Philadelphia, Pa.
1909	*Mercer, R. E.....*	1,541	*T. M., Westmoreland Coal Co., Philadelphia, Pa.*
1906	Meredith, H. P.....	.....	M. M., Penna. R. R., Sunbury, Pa.
1911	*Merrill, C. F.....*	562	*Supt., Leh. & Hud. River Ry., Warwick, N. Y.*
1897	*Mertsheimer, F.....*	2,320	*G. S. M. P., K. C. M. & O. Ry., Kansas City, Mo.*
1913	*Merwin, B. E.....*	42	*Aurora, Elgin & Chicago R. R., Wheaton, Ill.*
1914	Meyers, H. E.....	.....	S. S., Lehigh Valley R. R., Packerton, Pa.
1891	Michael, J. B.....	.....	M. M., Southern Ry. Co., Selma, Ala.
1891	Middagh, D. B.....	.....	N. & W. R. R., Roanoke, Va.
1892	*Mileham, C. M.....*	1,500	*M. C. B., Doud Stock Car Co., Chicago, Ill.*
1907	Millar, E. T.....	.....	G. C. I., B. & M. R. R., Boston, Mass.
1908	*Miller, A. C.....*	397	*G. F. M. D., Texas Midland R. R., Terrell, Tex.*
1905	*Miller, E. A.....*	12,518	*Supt. M. P., N. Y. C. & St. L. R. R., Cleveland, Ohio.*
1907	Miller, E. B.....	.....	D. M. C. B., B. & O. R. R., Baltimore, Md.
1895	*Miller, G. A.....*	1,699	*S. M. P., Fla. East Coast Ry., St. Augustine, Fla.*
1900	Miller, R. S.....	.....	M. C. B., N. Y. C. & St. L. R. R., Cleveland, Ohio.
1904	Miller, S. F.....	.....	F. C. D., El Paso & S. W. Sys., Carrizozo, N. M.
1895	Miller, Wm.....	.....	Kent, Ohio.
1896	*Milliken, Jas.....*	10,000	*S. M. P., P. B. & W. Ry., Wilmington, Del.*
1913	*Milliken, J. M.....*	1,134	*Supt. C. E., Gulf Refining Co., Frick Bldg., Pittsburgh, Pa.*

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1906	*Millis, Henry L.....*	1,000	*Gen. Mgr., West. Live Stock Exp. Co., Chicago, Ill.*
1914	Mills, Wm.....	.....	G. C. F., Grand Trunk Pacific Ry., Melville, Sask., Can.
1904	Milton, J. H.....	.....	S. C. D., C. R. I. & P. Ry., Chicago, Ill.
1908	Minick, Eli.....	.....	G. F. C. R., Lehigh Valley R. R., Ashley, Pa.
1889	Minton, W. D.....	.....	M. C. B., Tex. & Pac. Ry., Marshall, Tex.
1912	Mirts, P. P.....	.....	M. E., L. S. & M. S. Ry., Cleveland, Ohio.
1904	Mitchell, W. A.....	.....	M. C. B., M. K. & T. Ry., Sedalia, Mo.
1910	Monahan, J. J.....	.....	M. M., L. & N. R. R., Paris, Tenn.
1912	*Monfee, A. J.....*	960	*M. M., Bir. So. R. R., Pratt City, Ala.*
1912	*Montague, C. H.....*	399	*M. M., Q. O. & K. C. Ry., Milan, Mo.*
1908	*Montgomery, H.....*	2,905	*S. M. P. & E., Rutland R. R., Rutland, Vt.*
1893	*Mooney, P. T.....*	547	*M. C. B., Tex. Cent. Ry., Walnut Springs, Tex.*
1909	*Moore, B. R.....*	5,464	*S. M. P., Dul. & Iron Range R. R., Two Harbors, Minn.*
1913	*Mori, Hikozo.....*	.....	*C. M. E., So. Manchuria R. R., Dairen, Manchuria, China.*
1903	*Morgan, A. L.....*	15	*Supt., Wheeling Ter. Ry., Wheeling, W. Va.*
1913	*Morgan, C. F.....*	96	*G. M., Birmingham & No. West. Ry., Jackson, Tenn.*
1913	*Motherwell, J. S.....*	114	*M. M., La. & No. West. R. R., Homer, La.*
1914	*Moynihan, C. J.....*	8	*G. M., J. W. & N. W. R. R., Jamestown, N. Y.*
1909	*Muggah, John W.....*	1,065	*M. M., Sydney & L. Ry., Glace Bay, N. S., Can.*
1911	Muhlfeld, J. E.....	.....	Sherbrook Road, Scardale, N. Y.
1914	*Mulholland, D.....*	164	*Supt., Chicago Heights Terminal Transfer Ry., Chicago.*
1910	Munroe, J. T.....	.....	G. F. C. R., Erie R. R., N. Paterson, N. J.
1903	*Murphy, C. W.....*	366	*M. C., M. & K. R. R., Morganstown, W. Va.*
1909	Murphy, T. J.....	.....	M. C.—C. W. V. & S. Ry., Hendricks, W. Va.
1911	Murrian, W. S.....	.....	S. M. P., Southern Ry., Knoxville, Tenn.
1913	Murrin, W. G.....	467	M. S., British Columbia Elect. Ry., Vancouver, B. C.
1909	Mussey, Wm. H.....	.....	A. E. M. P., L. I. R. R. Co., Richmond Hill, N. Y.
1914	*Nash, C. L.....*	606	*Interstate R. R., Big Stone Gap, Va.*
1913	Nash, J. H.....	.....	S. M. P., Ill. Cent. R. R., Chicago, Ill.
1911	*Naylor, F.....*	1,000	*M. M. Miss. Cent. R. R., Hattiesburg, Miss.*
1908	*Needham, E. F.....*	22,580	*Supt., L. & C. Dept., Wabash R. R., Springfield, Ill.*
1908	Neel, T. M.....	.....	643 Woodward ave., McKees Rocks, Pa.
1885	Nelson, E. D.....	.....	Altoona, Pa.
1895	*Nettleton, W. A.....*	.....	*Kansas City, Mo.*
1913	*Neville, S. A.....*	107	*Meridian & Memphis Ry., Meridian, Miss.*
1911	*New, W. E.....*	475	*M. M., Kansas City Term. Ry., Kansas City, Mo.*
1913	*Newcomet, H. E.....*	.....	*Supt., Penna. Ter. Ry., Louisville, Ky.*
1912	*Newhouse, J. F.....*	20	*Mgr., Ky. & Ind. Term. R. R., Louisville, Ky.*
1902	*Nichols, L. T.....*	77	*G. M., C. & N. W. Ry., Chester, S. C.*
1913	Nicola, J. S.....	.....	C. F., Coal & Coke Ry., Gassaway, W. Va.
1910	Nolan, J. P.....	.....	M. M., M. L. & T. R. R. & L. W. R. R., Algiers, La.
1913	*Nordberg, A.....*	125	*M. M., Pittsburgh & Susquehanna R. R., Pittsburgh, Pa.*
1897	*Nuttall, W. H.....*	901	*S. M. P. & P. S., M. & N. E. Ry., Manistee, Mich.*
1914	Nystrom, K. F.....	.....	C. D., Grand Trunk Ry., Montreal, Canada.
1912	*O'Brien, J. J.....*	162	*St. L. Mer. B. Ter. Ry., Ter. R. R. Assn. of St. L., St. Louis, Mo.*
1910	*O'Brien, W. J.....*	5,795	*G. F., K. & M. Ry., Middleport, Ohio.*

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1913	O'Dea, P. J.	.....	G. I. C. D., Erie R. R., Buffalo, N. Y.
1910	O'Donnell, T. J.	.....	Arbitrator, East Buffalo, N. Y.
1912	*O'Hearne, J. E.*	15,186	*S. M. P., C. & A. R. R., Bloomington, Ill.*
1897	*O'Leary, D.*	503	*M. M., C. & P. S. R. R., Seattle, Wash.*
1905	Onderdonk, J. R.	.....	Eng. of Tests, B. & O. R. R., Baltimore, Md.
1893	Orchard, John H.	.....	F. C. D., D. & H. Co., Carbondale, Pa.
1911	Ord, L. C.	.....	G. I., Angus Shops, Can. Pac. Ry., Montreal, Can.
1908	*Osman, H. L.*	2,520	*S. C. D., Morris & Co., Ref. Lines, U. S. Yds., Chicago, Ill.*
1913	*Osmer, J. E.*	274	*M. C. B., Manistique & Lake Superior R. R., Toledo, Ohio.*
1903	Ott, Wm. B.	.....	A. E. M. P., Penn. R. R. Co., Altoona, Pa.
1913	Painter, J. H.	.....	Shop Supt., At. Coast Line R. R., Rocky Mount, N. C.
1896	Parker, T. E.	.....	Mo. River Despatch, Chicago, Ill.
1913	*Park, E. A.*	200	*S. M. P. & E., Peoria & Pekin Union Ry., Peoria, Ill.*
1912	Parks, O. J.	.....	G. C. I., Penn. Line, Ft. Wayne, Ind.
1904	*Paxton, Thos.*	4,333	*S. M. P., E. P. & S. W. R. R., El Paso, Tex.*
1910	*Peden, E. N.*	92	*M. M., N. M. Cent. R. R., Estancia, N. M.*
1905	Peiffer, Chas. E.	.....	G. C. I., B. R. & P. Ry., DuBois, Pa.
1913	Pendleton, E.	.....	C. I. I., Peoria & Pekin Ry. Ter., Peoria, Ill.
1901	*Perine, D. M.*	10,000	*S. M. P., Penn. R. R., N. J. Div., New York City.*
1907	*Persch, J. C.*	3	*Mercer Valley R. R., S. Sharon, Pa.*
1913	*Peters, John.*	848	*G. C. F., C. & W. I. R. R., Chicago, Ill.*
1914	Petersen, W. C.	.....	M. M., So. Pac. Co., Tucson, Aris.
1909	*Peterson, A. F.*	2,500	*M. C. B., Cold Blast Trans. Co., U. S. Y., Chicago, Ill.*
1914	*Peterson, Gust.*	336	*M. C. B. Wis. & Mich. Ry., Peshtigo, Wis.*
1896	Pew, R. C.	.....	S. C. D., Bay Term. R. R., Toledo, Ohio.
1910	*Pfaffin, Louis.*	19	*M. M., I. U. Ry., Indianapolis, Ind.*
1906	Pfahler, F. P.	.....	L. B. Insp. Div., Interstate Com. Com., Washington, D. C
1913	*Phelps, A. S.*	19	*Supt., New Orleans Public Belt R. R., New Orleans, La.*
1899	*Phillips, C.*	5,333	*M. M., N. O. & N. E. R. R., V. S. & P. Ry., A. & V. Ry., Meridian, Miss.*
1914	*Phillips, H. S.*	134	*G. S., Abilene & So. Ry., Abilene, Tex.*
1906	Pilcher, John A.	.....	M. E., N. & W. Ry., Roanoke, Va.
1911	Poole, J. L.	.....	C. F., Pere Mar. R. R., Ionia, Mich.
1890	Porcher, Samuel.	.....	P. A., Penn. R. R. Co., Philadelphia, Pa.
1914	Porter, C. D.	.....	A. E. M. P., Penna. R. R., Altoona, Pa.
1908	*Posson, E.*	71,463	*E. C. Con., A. T. & S. F. Ry., Chicago, Ill.*
1905	Pratt, E. W.	.....	A. S. M. P., C. & N. W. Ry., Chicago, Ill.
1914	*Prendergast, R. Q.*	5,200	*Supt., Bangor & Aroostook R. R., Milo Jct., Maine.*
1896	*Prescott, C. H.*	285	*M. M., S. I. R. R., Spokane, Wash.*
1913	*Price, W. E.*	7	*Supt., Carolina & Yadkin River Ry., High Point, N. C.*
1913	Purcell, J. A.	.....	Asst. to V.-P., A. T. & S. F. Ry., Chicago, Ill.
1896	Purves, T. B., Jr.	.....	Div. of Valuation Interstate Commerce Commission, Chicago, Ill.
1899	Quayle, Robt.	.....	G. S. M. P. and M., C. & N. W. Ry., Chicago, Ill.
1912	Quinn, C. H.	.....	A. E. M. P., N. & W. Ry., Roanoke, Va.

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1909	Rae, Clark H.....	.....	A. S. M., L. & N. R. R., 3431 3d ave., Louisville, Ky.
1911	Ramage, J. C.....	.....	Supt. Tests, Southern Ry., Alexandria, Va.
1902	Ramsdell, T. M.....	.....	M. C. B., Oregon-Wash. R. R. & Nav. Co., Portland, Ore.
1912	Ramsey, H. M.....	.....	C. I. T. D., Penn. R. R., Altoona, Pa.
1911	*Ramsey, N. P.....*	47	*G. M., Lorain, Ashland & Southern Ry., Ashland, Ohio.*
1913	*Randall, J. B.....*	760	*A. M. M., L. H. & St. L. Ry., Cloverport, Ky.*
1908	*Rande, H. G.....*	1,035	*F. C. R., Newburgh and South Shore Ry., Cleveland, Ohio.*
1911	*Ransom, W. C.....*	38	*Supt., Mnfrs. Jc. Ry., Hawthorne, Ill.*
1895	Rasbridge, R. B.....	.....	C. C. I., P. & R. Ry., Reading, Pa.
1913	*Raymond, W. H.....*	.....	*Supt., Tooele Valley R. R., Tooele City, Utah.*
1903	*Reading, R. K.....*	127,559	*S. M. P., Pa. R. R., E. Penn. Div., Altoona, Pa.*
1897	Reiley, B.....	.....	Foreman L. & C. Repairs, D. R. I. & N. W. Ry., Davenport, Iowa.
1914	*Replogle, J. L.....*	1,178	*V.-P., Cambria Steel Co., Johnstown, Pa.*
1912	Richards, C. F.....	.....	C. C. Insp., L. & H. R. Ry., Phillipsburgh, N. J.
1914	*Richardson, B. D.....*	2,500	*M. M., Midland Valley R. R., Muskogee, Okla.*
1908	Richardson, W. P....	.....	M. E., P. & L. E. R. R., Pittsburgh, Pa.
1901	*Richmond, W. H.....*	1,465	*M. M., L. S. & I. and M. & S. W. Rys., Marquette, Mich.*
1908	*Riddle, J. C.....*	73	*Asst. to Rec., M. C. & C. R. R., Marietta, Ohio.*
1909	Ridgeway, H. W.....	.....	M. M., Colo. & Sou. Ry., Denver, Colo.
1909	Rink, Geo. W.....	.....	M. E., Cent. R. R. of N. J., Jersey City, N. J.
1912	*Robb, J. W.....*	1,618	*Secy., Cudahy Refr. Line, Chicago, Ill.*
1909	Roberts, C. F.....	.....	S. M. P., Havana Cent. Ry., United Rys. of Havana, Havana, Cuba.
1914	Robertson, E. J.....	.....	S. C. D., M. St. P. & S. S. M. Ry., Minneapolis, Minn.
1914	*Robertson, W. R.....*	.....	*Supt., Niagara, St. C. & Tor. Ry., St. Catharines, Ont. Can.*
1912	Robbins, F. S.....	.....	A. G. F., Penna. R. R., Pitcairn, Pa.
1905	Robider, W. J.....	.....	M. C. B., Cent. of Ga., Savannah, Ga.
1906	Robins, S. P.....	.....	C. D. C. Dept., Can. Pac. Ry., Montreal, Can.
1909	*Robinson, W. H.....*	.....	*G. Mgr., Bolivia Ry. Co., Antofagasta, Chili, S. A.*
1907	Rockfellow, W. E....	.....	G. C. F., N. Y. C. & H. R. R. R., Oswego, N. Y.
1904	Rohrback, Geo. T....	.....	M. C. B., J. Dold Ref. Line, Wichita, Kan.
1910	Rollings, E. O.....	.....	M. M., L. & N. R. R., Howell, Ind.
1882	Rommel, Geo.....	.....	M. M., P. & R. Ry., Wilmington, Del.
1906	*Roope, Thos.....*	21,313	*S. M. P., C. B. & Q. Lines West., Lincoln, Neb.*
1910	*Root, C. G.....*	205	*G. Mgr., E. & M. Ry. & Nav. Co., The Temple, Chicago, Ill.*
1908	*Rose, F. E.....*	4	*Supt., C. & S. E. Ry., Hastings, Colo.*
1905	Rosing, W. H. V.....	.....	Spec. Engr., St. L. & S. F. R. R., Springfield, Mo.
1913	*Ross, C. A.....*	3	*Supt., St. Paul Bridge & Ter. Ry., So. St. Paul, Minn.*
1910	*Ross, Thos.....*	751	*M. M., T. & N. O. Ry., N. Bay, Ont., Can.*
1906	*Rossiter, A. L.....*	2,426	*S. M. P., C. P. & St. L. Ry., Jacksonville, Ill.*
1911	Rourk, W. H.....	.....	M. C. B., P. M. R. R., Detroit, Mich.
1903	Russum, T. H.....	.....	Supt. P. C. Dept., B. & O. R. R., Baltimore, Md.
1911	*Ruttle, C. S.....*	37	*Supt., D. B. C. & W. Ry., Bay City, Mich.*
1903	*Safford, V. P.....*	200	*Mgr., Mex. Nor. Ry., Escalon, Mex.*
1912	Sanborn, P. G.....	.....	M. M., Ocean Shore R. R., San Francisco, Cal.
1910	Sasser, E. C.....	.....	M. M., Southern Ry., Spencer, N. C.

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1914	*Sasser, J. W.....*	3,121	*S. M. P., Norfolk Southern R. R., Norfolk, Va.*
1914	*Satterlee, W. A.....*	80	*G. M., Joplin & Pittsburg R. R., Pittsburg, Kan.*
1914	Scanland, N. B.....	.....	M. M., Md. & Penna. R. R., Baltimore, Md.
1912	*Schlafge, Wm.....*	58,374	*G. M., Supt., Erie R. R., New York City.*
1908	Schmoll, G. A.....	.....	S. M. P., B. & O. R. R., Wheeling, W. Va.
1911	Schrader, J. R.....	.....	G. F., N. Y. C. & H. R. R. R., Mott Haven, New York City
1912	Schreyer, W. C.....	.....	A. C. F., M. & K. R. R., Morgantown, W. Va.
1914	Schroder, J. H.....	.....	M. M., J. L. C. & E. R. R., Jonesboro, Ark.
1909	Schroeder, J. H.....	.....	P. O. Box 276, Hoboken, N. J.
1912	Schultz, F. C.....	.....	C. I. I., Grand Cent. Station, Chicago, Ill.
1908	Schulze, R. W.....	.....	S. C. D., Frisco System, Springfield, Mo.
1911	*Schwartz, C. L.....*	1,178	*A. G. M., St. Louis Ref. Car. Co., St. Louis, Mo.*
1904	Scully, P.....	.....	F. C. D., N. O. & N. E. Ry., New Orleans, La.
1912	*Seabrook, C. H.....*	5,373	*S. M., Int. & Gt. Nor. R. R., Palestine, Tex.*
1910	Searles, E. J.....	.....	S. M. P., B. & O. R. R., Pittsburgh, Pa.
1907	*Seddon, C. W.....*	8,534	*S. M. P., D. M. & N. Ry., Proctor, Minn.*
1912	*Seidel, G. W.....*	7,881	*S. M. P. & R. S., Minn. & St. L. R. R., Minneapolis, Minn.*
1900	Seifert, S. P.....	.....	Asst. Foreman, N. & W. R. R., Roanoke, Va.
1907	Selloy, Saml. H.....	.....	G. F. C. D., B. & A. R. R., Allston, Mass.
1910	Senger, J. W.....	.....	M. C. B., L. S. & M. S. Ry., Collinwood, Ohio.
1908	*Sergeant, Lewis.....*	62	*Supt., C. K. & S. Ry., Kalamazoo, Mich.*
1904	*Setzekorn, Conrad....*	5,674	*G. F., Am. Ref. Trans. Co., St. Louis, Mo.*
1914	*Sexton, J. R.....*	550	*M. S., St. L. R. M. & P. Ry., La Junta, Colo.*
1906	Shackford, J. M.....	.....	C. D., D. L. & W. R. R., 427 Olive st., Scranton, Pa.
1907	*Shafer, George S.....*	3	*Supt., N. & P. Belt Line, Elizabeth River R. R., Port Norfolk, Va.*
1911	*Sheafe, J. S.....*	104	*M. M., S. I. R. T. Ry., Clifton, S. I., New York.*
1909	*Sheahan, J. F.....*	3,882	*S. M. P., A. B. & A. R. R., Fitzgerald, Ga.*
1913	Shearer, R. D.....	.....	A. D. G. F., N. Y. C. & H. R. R. R., East Buffalo, N. Y.
1905	*Shearman, C. S.....*	356	*Chgo. Jct. Ry., 49th st. and Center ave., Chicago, Ill.*
1913	*Sheehy, Fred J.....*	65	*V.-P. and G. M., Chicago Short Line Ry., South Chicago, Ill.*
1910	*Shoemaker, C. A.....*	2,000	*Gen. Supt., German-American Car Lines, East Chicago, Ind.*
1907	Shone, William.....	.....	G. F., N. Y. C. & H. R. R. R., Buffalo, N. Y.
1906	*Shreve, W. J.....*	249	*M. M., M. D. & W. Ry., International Falls, Minn.*
1912	*Shuey, Geo.....*	8	*Ocala Nor. Ry., Ocala, Fla.*
1914	*Shurtliff, F. M., Jr...*	340	*Sumpter Valley Ry., Baker, Ore.*
1914	Simpson, C. S.....	.....	G. C. F., St. L. & S. F. Ry., Sapulpa, Okla.
1911	*Simpson, Porterfield...*	1,083	*Supt. Equip., Indian Ref. Co., Laurenceville, Ill.*
1912	Sisco, G. E.....	.....	A. E. M. P., Penna., Lines, Columbus, Ohio.
1907	Sitterly, W. H.....	.....	G. C. I., Penna. R. R. Co., Buffalo, N. Y.
1912	Siverwright, J. S.....	.....	Asst. Loco. Supt., Cuban Cent. Rys., Sagua la Grande, Cuba.
1911	*Slayton, C. E.....*	700	*Asst. Supt., St. J. & G. I. Ry., St. Joseph, Mo.*
1911	*Slayton, F. T.....*	7,294	*S. M. P., Virginian Ry., Princeton, W. Va.*
1908	*Small, Fred. F.....*	1,394	*Supt. Mech. Dept., Pac. Elec. Ry., Los Angeles, Cal.*
1890	Small, H. J.....	2,430	Broadway, San Francisco, Cal.
1911	*Small, J. W.....*	19,147	*S. M. P., Seaboard Air Line Ry., Tampa & Gulf Coast R. R., Portsmouth, Va.*
1914	Small, W. T.....	.....	M. M., So. Pac. Co., Dunsmuia, Cal.
1910	Smart, G. E.....	.....	M. C. B., Intercolonial Ry., Moncton N. B., Canada.

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Date.	NAME.	No. of Cars Owned.	Railroad Company and Address.
1914	Smeltzer, G. H.....	.....	S. L. & C. S., P. & R. Ry., Reading, Pa.
1913	Smethurst, T.....	.....	S. M. P. & R. S., Interoceanic R. R., Puebla, Mex.
1893	*Smith, A. D.....*	729	*G. S., Cornwall & Lebanon R. R., Lebanon, Pa.*
1913	Smith, A. E.....	.....	A. M. C. B., Union Tank Line Co., 26 Broadway, New York City.
1907	Smith, Benj. T.....	.....	G. F., W. J. & S. S. R. R., Camden, N. J.
1912	*Smith, D. C.....*	39	*T. M., Ocilla So. R. R., Ocilla, Ga.*
1912	*Smith, D. S.....*	20	*G. M., M. St. P. R. & D. E. T. Co., Minneapolis, Minn.*
1904	*Smith, E. O.....*	153	M. M., St. L. & H. Ry., Hannibal, Mo.
1914	Smith, H. E.....	.....	C. & E. T., L. S. & M. S. Ry., Collinwood, Ohio.
1909	Smith, Henry J.....	.....	G. C. I., D. L. & W. R. R., Scranton, Pa.
1914	*Smith, J. A.....*	12	*Middletown & Unionville R. R., Middletown, N. Y.*
1913	*Smith, J. L.....*	5,202	*M. M., P. S. & N. R. R., St. Marys, Pa.*
1914	Smith, M. R.....	.....	M. M., Chgo., Ind. & Louisville R. R., Lafayette, Ind.
1912	*Smith, P. F.....*	7,446	*S. M. P., Penna. Lines, Cent. Sys., Toledo, Ohio.*
1906	Smith, P. G.....	.....	M. M., Maine Central Ry., Bangor, Maine.
1901	*Smith, R. D.....*	7,817	*S. M. P. and R. S., B. & A. R. R., Boston, Mass.*
1897	*Smith, R. E.....*	31,041	*G. S. M. P., Atlantic Coast Line, Wilmington, N. C.*
1909	*Smith, Samuel.....*	366	*M. M., Nev. Nor. Ry., East Ely, Nev.*
1911	*Snodgrass, W. C.....*	2	*Prest., Blakely So. R. R., Thomasville, Ga.*
1911	*Sommer, Chas. H.....*	51	*1st V.-P., Q. A. & P. Ry., St. Louis, Mo.*
1913	Spence, A. N.....	.....	Trav. Inspr., Southern Ry., Washington, D. C.
1914	*Spencer, A. B.....*	7	*G. M., Crosbyton Southplains R. R., Crosbyton, Tex.*
1897	Spoor, C. E.....	.....	M. C. B., B. & S. R. R., Galeton, Pa.
1914	*Sprague, F. N.....*	72	*F. C. S., H. T. & W. R. R., Malone, N. Y.*
1908	*Staley, H. F.....*	4,804	*M. M., C. C. & O. Ry., Erwin, Tenn.*
1905	Stansbury, C. M.....	.....	Clovis, N. M.
1892	*Stark, F. H.....*	3,740	*Supt., Montour R. R., Coraopolis, Pa.*
1909	Sternberg, A. S.....	.....	G. I. C. D., Wabash R. R., Springfield, Ill.
1897	*Stiffey, S. S.....*	7,633	*S. M. P., T. & O. C. R. R. (Zanesville & West.), Bucyrus, Ohio.*
1906	Stillwagon, Geo. W...	.....	M. C. B., P. S. & N. R. R., St. Marys, Pa.
1911	*Stingley, T. W.....*	.....	*T. A., B. & S. P. R. R., Sparrows Point, Md.*
1912	Stockton, J.....	.....	M. M., N. O. T. R. R., New Orleans, La.
1913	Stoll, W. J.....	.....	Chief Interchange Inspector, Toledo, Ohio.
1914	*Stone, H. W.....*	19	*Caro. & West. R. R., Hampton, S. C.*
1914	*Stone Burner, W. J...*	5	*Gen. Supt., O. N. M. & P. Ry., Ardmore, Okla.*
1911	*Stow, Fred. T.....*	127	*Asst. Supt., Delray Connecting R. R., Detroit, Mich.*
1912	Streeter, L. P.....	.....	A. B. Eng., Ill. Cent. R. R., Chicago, Ill.
1910	*Stroup, Henry.....*	10	*G. M., Ft. Smith, Subiaco & East. Ry., Paris, Ark.*
1911	Stubbs, F. W.....	.....	M. E., C. G. W. R. R., Oelwein, Iowa.
1913	*Sugrue, J. F.....*	20	*Supt., Lake Charles & Nor. Ry. and Louisiana & Pacific Ry., DeRidder, La.*
1914	*Sullivan, D.....*	186	*G. S., Apalachicola Northern R. R., Port St. Joe, Fla.*
1914	*Sullivan, J. J.....*	11,291	*S. M., N. C. & St. L. Ry., Nashville, Tenn.*
1912	*Sullivan, R. J.....*	645	*Supt., Wichita Falls & N. W. Ry., Wichita Falls, Tex.*
1903	Sumner, Eliot.....	.....	M. M., Nor. Cent. R. R., Baltimore, Md.
1912	Swanson, Chas.....	.....	Supt. Car Shops, A. T. & S. F. Ry., Topeka, Kan.
1909	Sweetman, E. M.....	.....	M. M., Southern Ry., Birmingham, Ala.
1906	*Sweringen, F. H.....*	7,500	*M. M., Street's West. Stable Car Line, Chicago, Ill.*
1898	*Symons, W. E.....*	15	*Lake Erie, Franklin & Clarion R. R., Franklin, Pa.*

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Date.	NAME.	No. of Cars Owned.	Railroad Company and Address.
1904	Tatum, John J.....	.....	S. F. C. D., B. & O. R. R., Mt. Clare, Baltimore, Md.
1897	*Tawse, Robt*.....	3,509	*S. M. P., D. T. & I. Ry., Jackson, Ohio.*
1908	*Taylor, F. W*.....	82	*P. A., Keweenaw Central R. R., Calumet, Mich.*
1909	Taylor, J. W.....	.....	F. C. S., Corvallis & Eastern Ry., 809 E. 8th st., Albany, Ore.
1914	*Temple, N. B*.....	3	*Rockingham R. R., Rockingham, N. C.*
1908	Tennant, M. P.....	.....	Asst. Loco., Car. and Wagon Supt., Jamaica Govt. Ry., Kingston, Jamaica.
1910	Terrell, C. H.....	.....	S. M. P., C. & O. R. R., Huntington, W. Va.
1906	*Tewksbury, E. M*.....	60	*G. S., South Buffalo Ry., Buffalo, N. Y.*
1908	Thiele, Chas. F.....	.....	G. C. I., Penna Lines, Columbus, Ohio.
1904	*Thomas, F. H*.....	74	*V.-P. and G. M., Bellefonte Central R. R., Bellefonte, Pa.*
1904	Thomas, H. T.....	.....	M. M., Detroit & Mackinac Ry., East Tawas, Mich.
1902	*Thomas, I. B*.....	10,000	*S. M. P., Northern Central Ry., Williamsport, Pa.*
1910	*Thomas, J. J*.....	11,100	*S. M. P., Southern Ry. in Miss., and M. & O. Ry., Mobile, Ala.*
1906	*Thompson, George*....	1,390	*S. M. P., D. & S. L. R. R., Denver, Colo.*
1903	Thompson, W. O.....	.....	M. C. B., N. Y. C. & H. R. R. R., Buffalo, N. Y.
1914	Thomson, Geo.....	.....	M. C. B., L. S. & M. S. Ry., Englewood, Ill.
1906	*Thomson, S. G*.....	43,176	*S. M. P., P. & R. Ry., Reading, Pa.*
1914	*Thorn, W. H*.....	12,993	*M. C. B., C. St. P. M. & O. Ry., Hudson, Wis.*
1902	Thornton, Chas. J....	.....	S. M. P., Jamaica Govt. Ry., Kingston, Jamaica.
1911	Tierney, H. J.....	.....	M. E., M. K. & T. Ry., Parsons, Kan.
1913	Tilt, E. B.....	.....	Eng. Tests, Canadian Pac. Ry., Montreal, Can.
1912	*Tollerton, W. J*.....	51,904	*G. M. S., Rock Island Lines, Chicago, Ill.*
1912	Totten, E. C.....	.....	D. G. C. F., N. Y. C. & H. R. R. R., Weehawken, N. J.
1909	Tracy, W. L.....	.....	G. M. M., Mo. Pac. Ry., St. Louis, Mo.
1912	Trapnell, F. W.....	.....	Chief Interchange Inspector, Kansas City, Mo.
1903	Treleaven, Thos. A...	.....	M. C. B., Grand Trunk Ry., London, Ont., Can.
1913	Trumbull, A. G.....	.....	M. S., Erie R. R., Jersey City, N. J.
1912	*Turnbull, R. J*.....	43,137	*S. M., Mo. Pac. Ry., St. Louis, Mo.*
1906	Turner, Amos.....	.....	M. M., Lehigh Valley R. R. Co., Easton, Pa.
1889	*Turner, L. H*.....	28,241	*S. M. P., P. & L. E. R. R., Pittsburgh, Pa.*
1908	Turney, E. E.....	.....	Ind. Car & Equip. Co., E. Chicago, Ind.
1912	Twedel, J. W.....	.....	C. F., St. J. & G. I. R. R., St. Joseph, Mo.
1912	Upton, T. W.....	.....	G. F., Georgia & Florida Ry., Douglas, Ga.
1909	Vittum, J. E.....	.....	Chf. Joint Insp., Columbus, Ohio.
1907	*Van Brimer, George*...	543	*Supt., Colo. & Wyo. Ry., Pueblo, Colo.*
1904	*Van Buskirk, H. C*...	8,388	*S. M. P., Colo. & Sou. Ry., Denver, Colo.*
1912	*Van Slyck, Frank*....	5	*G. M., Fairport, Painesville & Eastern Ry., Cincinnati, Ohio.*
1903	Vaughan, H. H.....	.....	A. to V.-P., Canadian Pacific Ry. Co., Montreal, Can.
1892	Vogt, A. S.....	.....	M. E., Penna. R. R. Co., Altoona, Pa.
1913	*Wagner, G. V*.....	79	*M. M., South Georgia Ry., Quitman, Ga.*
1909	*Wagoner, J. V*.....	293	*M. M., Georgia, Florida & Alabama R. R., Bainbridge, Ga.*
1909	Wahlen, John.....	.....	M. M., Montpelier & Wells River R. R., Montpelier, Vt.
1912	Wallis, J. T.....	.....	G. S. M. P., Penna. R. R., Altoona, Pa.

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LIST OF MEMBERS — *Continued.*

Date.	NAME.	No. of Cars Owned.	RAILROAD COMPANY AND ADDRESS.
1899	*Walsh, F. O.....*	2,231	*S. M. P. and E., Georgia R. R., Augusta, Ga.*
1914	*Warnock, H. R.....*	10,171	*S. M. P., West. Md. R. R., Hagerstown, Md.*
1913	*Waters, J. J.....*	18,728	*S. M. P., Pere Marquette R. R., Grand Rapids, Mich.*
1914	Watkins, H. W.....	.....	M. C. R., So. Pac. Co., Los Angeles, Cal.
1910	*Watkins, T. H.....*	1,000	*Receiver, Penna. Coal & Coke Co., 17 Battery pl., New York City.*
1914	Way, E. S.....	.....	G. F., M. C. B. Clearing House, Penna. R. R., Altoona. Pa.
1914	Webb, E. R.....	.....	M. M., Mich. Cent. R. R., St. Thomas, Ont., Canada.
1914	Weiler, G. S.....	.....	G. C. F., G. C. & S. F. R. R., Cleburne, Tex.
1914	Weitsel, H.....	.....	Asst. Supt., Ariz. East. R. R., Phoenix, Ariz.
1914	*Welch, J. J.....*	180	*Supt., Dela. & Nor. R. R., Margaretville, N. Y.*
1909	West, A. C.....	.....	So. Braintree, Mass.
1897	Westervelt, Jos.....	.....	M. C. B., N. Y. C. & H. R. R. R., Rochester, N. Y.
1909	*White, A. M.....*	1,626	*F. C. D., Colorado Midland Ry., Colorado City, Colo.*
1913	White, H. J.....	.....	G. C. F., Can. Northern Quebec R. R., Joliette, Que., Can.
1914	*Wiggins, R. A.....*	.....	*Louisville & Wadley R. R., Wadley, Ga.*
1891	*Wilcox, W. J.....*	8	*M. M., Las Vegas & Tonopah Ry., Las Vegas, Nev.*
1907	*Wilder, J. C.....*	458	*Supt., McCloud River R. R., McCloud, Cal.*
1902	*Wildin, G. W.....*	41,881	*Mech.* { *Supt., N. Y. N. H. & H. R. R.,* / *Central New England Ry.,* } *New Haven, Conn.*
1914	Williams, J. W.....	.....	C. F., P. S. & N. R. R., Angelica, N. Y.
1912	Wilson, Jas, W.....	.....	Chf. Joint Car Inspector, Williamsport, Pa.
1908	Wilson, R. D.....	.....	154 W. Windsor st., Reading, Pa.
1902	Wilson, W. H.....	.....	Asst. to 3d V.-P., Nor. Pac. Ry., St. Paul, Minn.
1908	Wirt, G.....	.....	M. M., C. C. C. & St. L. Ry., Delaware, Ohio.
1914	Wood, E. H.....	.....	D. C. F., Can. Pac. Ry,, W. Toronto, Ont., Canada.
1908	*Wright, J. H.....*	45	*Prest., Ark. Cent. R. R., Ft. Smith, Ark.*
1902	Wright, R. V.....	.....	192 N. Walnut st., East Orange, N. J.
1913	Wright, O. C.....	.....	A. E. M. P., Penna. Lines West, Ft. Wayne, Ind.
1907	*Wyman, R. L.....*	2,110	*M. M., Lehigh & New England R. R., Pen Argyl, Pa.*
1912	*Wymer, C. J.....*	357	*G. C. F., Belt Ry., Chicago, Ill.*
1912	*Yates, L. L.....*	13,100	*Pacific Fruit Express Co., Flood Bldg., Los Angeles, Cal.*
1903	Yergy, J. P.....	.....	G. C. I., Penna. R. R., Altoona, Pa.
1900	York, Francis Collin..	.....	Loco. & Car Supt., Buenos Aires & Pacific R. R., Junin, Buenos Aires, Arg. Rep., S. A.
1902	Young, C. B.....	.....	M. E., C. B. & Q. R. R., Chicago, Ill.
1908	Young, Charles D....	.....	E. of T., Penna. R. R., Altoona, Pa.
1905	Young, J. P.....	.....	G. F. C. D., Mo. Pac. Ry., 3001 Choteau ave., St. Louis, Mo.
1914	Younger, T. W.....	.....	S. M. P., So. Pac. Co., Sacramento, Cal.
1913	Zeleny, Frank.....	.....	Engr. Tests, C. B. & Q. R. R., Aurora, Ill.
1911	Zweibel, C. A.....	.....	S. C. D., A. C. L. R. R., Wilmington, N. C.

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LIFE MEMBERS.

Date.	NAME.	RAILROAD COMPANY.	ADDRESS.
1883	CHAMBERLAIN, J. T.		95 Otis st., Medford, Mass.
1888	CORY, CHARLES H.		Lima, Ohio.
1891	CRONE, S. A.	Buffalo Brake Beam Co.	New York City.
1898	FLEMING, J. W.		Richmond, Va.
1896	FOWLER, W. E.		Westmount, P. Q., Can.
1885	GRIEVES, E. W.	1756 Park ave.	Baltimore, Md.
1870	HACKETT, GEO.	Philadelphia & Reading R. R.	Elisabeth, N. J.
1872	KIRBY, JOHN.		Adrian, Mich.
1867	LEVAN, J. P.	Penna. R. R.	Altoona, Pa.
1877	MARDEN, J. W.		Waltham, Mass.
1873	MCILWAIN, J. D.		
1875	MCWOOD, WM.	Grand Trunk	Montreal, Can.
1886	MILLEN, THOS.		
1885	RHODES, G. W.	St. Louis Road	Bergerville, P. Q., Can.
1883	STEINBRENNER, A. G.		
1883	THOMAS, W. H.	4230 Spruce st.	Philadelphia, Pa.
1871	WEBSTER, H. A.	98th st. and 3d ave.	New York City.
1887	WELSH, BENJAMIN.		Sacramento, Cal.
1882	WICKS, CASPER.	Cumberland Valley	Chambersburg, Pa.
1887	SCHROYER, C. A.	C. & N. W. Ry.	Chicago, Ill.
1890	MORRIS, W. S.		813 Berry st., Ft. Wayne, Ind.

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ASSOCIATE MEMBERS.

Date.	NAME.	RAILROAD COMPANY.	ADDRESS.
1909	BENJAMIN, PROF. C. H..	Purdue University.....	La Fayette, Ind.
1910	ENDSLEY, PROF. L. E...	.....	510 East End ave., Pittsburgh, Pa.
1902	FOWLER, GEO. L.....	.....	83 Fulton st., New York City.
1902	GOSS, PROF. W. F. M...	University of Illinois.....	Urbana, Ill.
1902	HENDERSON, G. R.....	500 N. Broad st.....	Philadelphia, Pa.
1905	HITT, RODNEY.....	Asso. Editor *Electric Ry. Journal*.....	239 W. 30th st., N. Y.
1896	LANE, F. W.....	537 W. 67th st.....	Chicago, Ill.
1903	LOVELL, ALFRED.....	819 Harrison Bldg.....	Philadelphia, Pa.
1912	SCHMIDT, PROF. E. C....	University of Illinois.....	Urbana, Ill.
1889	SINCLAIR, A.....	Editor *Locomotive Engineering*.....	New York City.
1902	SMITH, W. A.....	Manhattan Bldg.....	Chicago, Ill.
1902	SELBY, C. A.....	United Bank Bldg.....	Pittsburgh, Pa.

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CONSTITUTION.

ARTICLE I.

NAME.

SECTION 1. The name of the Association shall be "The Master Car Builders' Association."

ARTICLE II.

OBJECTS AND LIMITS OF ACTION.

SECTION 1. The objects of this Association shall be the advancement of knowledge concerning the construction, maintenance and service of railroad cars and the parts thereof, by investigations through committees and discussions in convention; to provide an organization through which the members, and the companies they represent, may agree upon such joint action as may be required to bring about uniformity and interchangeability in the parts of railroad cars, to improve their construction, and to adjust the mutual interest growing out of their interchange and repair; but the action of the Association shall have only a recommendatory character, and shall not be binding upon any of its members or the companies represented in it.

SEC. 2. Subjects involving legal, transportation, permanent way or traffic questions, or for any other reason requiring such action, may be submitted as recommendations to the American Railway Association.

ARTICLE III.

MEMBERSHIP.

SECTION 1. There shall be four classes of members — Active, Representative, Associate and Life Members. Each member must sign the Constitution or authorize the Secretary to sign for him.

Active members are entitled to one vote on all questions. A candidate for admission to the Association as an active member must make application on a form approved by the Executive Committee, upon which he shall make a statement giving an account of his qualifications, and an agreement that he will, if admitted, conform to the Constitution, By-Laws and Rules of the Association. He must refer to at least three active or representative members to whom he is personally known.

SEC. 2. Any person employed by a railroad company or railroad companies jointly, having charge of the designing, construction or maintenance thereof of the car equipment, and one representative from other companies owning or operating 1000 cars or over, which are not in process of purchase by other parties, and having charge of the designing, construction and main-

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tenance of the car equipment thereof, may become an active member upon the approval of his application by the Executive Committee and payment of one year's dues. Unless dropped from the Association, his membership shall continue until his written resignation is received by the Secretary.

SEC. 3. Any person having knowledge of car construction may become a representative member by presenting a written appointment from president, vice-president, general manager or general superintendent of any railroad to represent its interests in the Association; provided, that no representative member shall represent more than one railroad or system of railroads.

Similarly, any person having knowledge of car construction may become a representative member from a private car company or other company owning or operating railway cars, by presenting a written appointment from the president, vice-president or general manager of the company; provided, that said company owns or operates 1000 cars or over.

Representative members shall have all the privileges of an active member, including one vote on all questions, and shall, on all measures affecting the interests of the companies represented, which the majority of the Association decide shall be determined on the basis of cars represented, have one vote for each 1000 cars which are owned, or which are in use or progress of purchase by the road, system or private car company or other company which he represents. His membership shall continue until notice is given the Association of his withdrawal, or of the appointment of his successor.

No railroad or system of roads, private car lines or other companies owning cars under one general manager or general superintendent shall have more than one representative member.

In the enumeration of cars, four axles to count as one car.

SEC. 4. Engineers or other persons having such knowledge of science, or experience in matters pertaining to the construction of cars, as would be of especial value to the Association or railroad companies, may be proposed as associate members by three members not associates. The names of such candidates shall then be referred to the Executive Committee, which shall report to the Association on their fitness for such membership. They shall be elected by written or printed ballot at any regular meeting of the Association, held not less than six months after a candidate has been proposed, and five dissenting votes shall reject. The number of associate members shall not exceed fifty. Associate members shall be entitled to all the privileges of active members, excepting that of voting and being elected to office in the Association.

Such membership shall continue until written resignation is received by the Secretary, unless dropped from the Association or the membership is terminated by the nonpayment of dues, or by the member becoming engaged in business which, in the judgment of the Executive Committee, would impair his usefulness to the Association or discriminate against others similarly engaged.

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SEC. 5. Members of this Association, either active or representative, who have been in good standing twenty years, or members who have served as President of the Association, may become candidates for life membership on the recommendation of the Executive Committee. The names of such members shall be referred to the Association in convention for election by written or printed ballot at any regular meeting of the Association, and five dissenting votes shall reject.

SEC. 6. Any member may be dropped from membership for cause prejudicial to the interests of the Association by a vote of three-fourths of all the members of the Executive Committee; provided, that written notice of the charges preferred against him shall have been given him at least two months prior to such action.

SEC. 7. Upon the adoption of these amendments to the Constitution, the Executive Committee will pass on the eligibility of the present members under the Constitution as amended, and the membership of those found not to be eligible will terminate on the expiration of the dues already paid.

ARTICLE IV.

OFFICERS.

SECTION 1. The officers of the Association shall be a President, three Vice-Presidents, Treasurer, Secretary and six Executive Members. The committees for conducting the work of the Association as an organization shall consist of an Executive Committee of eleven members, including the President, the three Vice-Presidents, the Treasurer and the six Executive Members, and a Committee on Nominations of five members.

ARTICLE V.

DUTIES OF OFFICERS.

SECTION 1. The duties of all officers shall be such as usually pertain to their offices, or may be delegated to them by the Executive Committee of the Association.

ARTICLE VI.

EXECUTIVE COMMITTEE.

SECTION 1. The Executive Committee shall exercise a general supervision over the interests and affairs of the Association, recommend the amount of the annual assessment, call, prepare for and conduct general conventions, and make all necessary purchases, expenditures and contracts required to conduct the current business of the Association, but shall have no power to make the Association liable for any debt to an amount beyond that which at the time of contracting the same shall be in the Treasurer's hands in cash, and not subject to prior liabilities.

The Executive Committee may exercise such supervision over the Standards, Recommended Practice or rules of this Association as may be necessary to meet any emergency that may arise during the year in the

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conduct of the affairs of the Association, such action to be taken only on the unanimous vote of the members of the Executive Committee.

It shall make a report at each convention, which shall cover the action it has taken on such general or emergent supervision, and make such recommendations as it may deem necessary on questions of importance to the Association.

SEC. 2. The Executive Committee shall select and appoint the members of the several standing committees and of such special committees as may be found necessary from time to time for conducting the business of the Association, and for investigating such matters as the Association may refer to the Executive Committee or the Executive Committee may deem expedient to carry out the purposes of the Association. It shall make appointments in the membership of any of the committees that may be necessary to fill any vacancies which may occur.

SEC. 3. The Executive Committee shall receive, examine and approve before public reading, all communications, papers and reports, and it shall decide what portion of the reports, papers and drawings shall be printed in the annual report. It shall also determine which, if any, of the subjects presented at the convention, or by the members, shall be referred to the American Railway Association.

SEC. 4. The Executive Committee shall offer to the convention the names of ten active or representative members, not officers of the Association, as candidates for the Committee on Nominations; provided, that on the adoption of these amendments the President will appoint a Committee on Nominations of five members, to serve until their successors are elected.

SEC. 5. Two-thirds of the members of the Executive Committee may call special meetings of the Association, to be held not less than thirty days after a notice thereof has been mailed to each member of the Association.

SEC. 6. Five members of the Executive Committee shall constitute a quorum for the transaction of business.

ARTICLE VII.

COMMITTEE ON NOMINATIONS.

SECTION 1. It shall be the duty of the Committee on Nominations to offer to the convention the name of one member as a candidate for each of the following offices: President, First Vice-President, Second Vice-President, Third Vice-President and Treasurer, and the names of three members as candidates for Executive members. Each person so named shall be either an active or representative member of the Association.

SEC. 2. When twenty or more members desire to propose the name of a member for any office in place of the name suggested by the Committee on Nominations, the Secretary shall place the name of such member for said office on the printed ballot, making a statement to the effect that such name has been proposed by a certain number of members.

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ARTICLE VIII.

ELECTION AND APPOINTMENT OF OFFICERS, AND TENURE OF OFFICE.

SECTION 1. The officers, excepting as otherwise herein provided, shall be elected at the regular meeting of the Association, held in June of each year, and the election shall not be postponed except by unanimous consent.

PRESIDENT AND TREASURER.

SEC. 2. The President and Treasurer shall be elected by written or printed ballots, the candidate receiving a majority of the votes cast shall be declared elected, and shall hold office for one year, or until successor is chosen.

VICE-PRESIDENTS AND EXECUTIVE MEMBERS.

SEC. 3. The Vice-Presidents and Executive Members shall be elected by written or printed ballots. The Vice-Presidents shall hold office for one year, and the Executive Members for two years, or until successors are chosen. Three Vice-Presidents and three Executive Members to be elected each year.

SEC. 4. In the election of Vice-Presidents and Executive Members each active and representative member may cast one vote for each Vice-President and for each Executive Member to be elected.

SEC. 5. The members of the Committee on Nomination shall be elected by written or printed ballots, and shall hold office for one year, or until their successors are chosen.

SEC. 6. In the election of the members of the Committee on Nominations, each active and representative member may cast one vote for each of the members of the committee to be elected. The five candidates who receive the largest number of votes shall be declared elected.

SEC. 7. A Secretary, who may or may not be a member of the Association, shall be elected by a majority of the Executive Committee at its first meeting after the annual election, or as soon thereafter as the votes of a majority of the members of the Executive Committee can be secured for a candidate. The term of office of the Secretary thus elected, unless terminated sooner, shall cease at the first meeting, after the next annual election succeeding his appointment, of the Executive Committee organized for the transaction of business. Two-thirds of the members of the Executive Committee shall, however, have power to remove the Secretary at any time. His compensation, if any, shall be fixed for the time that he holds office by a vote of a majority of the Executive Committee. He shall also act as Secretary of the Executive Committee.

The Secretary shall be required to give bond to an amount which a majority of the members of the Executive Committee may require.

TREASURER.

SEC. 8. The Treasurer shall be required to give bonds to an amount which a majority of the members of the Executive Committee demand.

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No bill shall be paid by him for the Association, excepting for current expenses, until it has been certified by the person or persons authorized to contract it.

ELECTIONS.

SEC. 9. At the first session of the annual meeting the report of the Committee on Nominations, announcing the names of the nominees for officers of the Association to fill vacancies for the ensuing year, shall be read. The election shall not be held before the day after such announcement, except by unanimous consent. Votes may be cast for any member eligible to serve as President, Vice-President, Treasurer, Executive Member or member of the Committee on Nominations, by adding the name to the printed ballot.

SEC. 10. In all ballots for President, Vice-Presidents, Treasurer, Executive Members, Committee on Nominations, or associate or life members, at the meetings of the Association, in order to preserve the secrecy of the ballot, the following form of voting shall be adhered to: An envelope shall be provided on which there shall be a blank space for the name of the member; smaller envelopes shall be provided on which shall be printed the words "For Officers," "For Executive Members," "For Committee on Nominations," "For Associate and Life Membership," and otherwise unmarked. In these envelopes the ballots shall be placed by those voting them, and they shall then be placed within the larger envelope and presented to the general tellers. When a ballot is to be taken the President will announce the names of all required tellers. Three general tellers shall have charge of receiving and recording the ballots cast. When all ballots have been cast these tellers will announce that the polls are closed. They shall then remove the smaller envelopes, count and announce the vote for officers, and shall deliver the envelopes marked "For Executive Committee" to two tellers, who shall count and announce to the general tellers the vote for Executive Members, and those marked "For Committee on Nominations" to two tellers, who shall count and announce to the general tellers the vote for the Committee on Nominations, and those marked "For Associate and Life Members" to two tellers, who shall count and announce to the general tellers the vote for associate and life membership.

The general tellers shall record and announce the total number of votes cast, the result of the vote, and shall be the judges of eligibility of any ballot presented.

When a ballot for officers or membership on committees shall be announced as having eventuated in a tie vote, or be otherwise undecided, upon such announcement the final result shall be determined by the majority of the members present.

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ARTICLE IX.

SECTION 1. Unless otherwise provided herein, a vote in the session of the Association may be taken viva voce, by arising, or by written or printed ballot, in any of which only active and representative members shall participate. Letter ballots may be ordered to be taken in such manner and under such conditions as the Association may, by resolution from time to time, direct.

SEC. 2. Printed ballots for use in the election of officers, executive members, the Committee on Nominations, and for Associate and Life Membership, to be of the form appended hereto.

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BALLOT FOR OFFICERS.

MASTER CAR BUILDERS' ASSOCIATION.

ELECTION OF.....

INSTRUCTIONS.

To vote in favor of all the names on this ballot leave it as it is — unmarked.

To vote against a nominee draw a line through his name.

If you wish to vote for another eligible person write his name under the one marked out.

The names printed are those of the candidates proposed by the Nominating Committee.

FOR PRESIDENT.
(Vote for one.)

JOHN JAMES

FOR FIRST VICE-PRESIDENT.
(Vote for one.)

JAMES JOHNS

FOR SECOND VICE-PRESIDENT.
(Vote for one.)

RICHARD ROE

FOR THIRD VICE-PRESIDENT.
(Vote for one.)

GEORGE GREEN

FOR TREASURER.
(Vote for one.)

WILLIAM WILLIAMS

NOTE.— Place card in small envelope. Seal and enclose in outer envelope.

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BALLOT FOR EXECUTIVE MEMBERS.

MASTER CAR BUILDERS' ASSOCIATION.

ELECTION OF.....

INSTRUCTIONS.

To vote in favor of all the names on this ballot leave it as it is — unmarked.

To vote against a nominee draw a line through his name.

If you wish to vote for another eligible person write his name under the one marked out.

The names printed are those of the candidates proposed by the Nominating Committee.

FOR EXECUTIVE MEMBERS.

(Vote for three.)

A. A. ANDREWS
B. B. BOYD
C. C. CARR

NOTE.— Place card in small envelope. Seal and enclose in outer envelope.

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BALLOT FOR COMMITTEE ON NOMINATIONS.

MASTER CAR BUILDERS' ASSOCIATION.

ELECTION OF.....

INSTRUCTIONS.

To vote against a nominee draw a line through his name.

If you wish to vote for another eligible person write his name under the one marked out.

The names printed are those of the candidates proposed by the Executive Committee.

FOR COMMITTEE ON NOMINATIONS.

(Vote for five.)

D. D. DAVIS
E. E. EARLE
F. F. FAY
G. G. GIBSON
H. H. HENRY
J. J. JOHNS
K. K. KING
L. L. LAMONT
M. M. MURPHY
N. N. NEGLEY

NOTE.— Place card in small envelope. Seal and enclose in outer envelope.

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BALLOT FOR LIFE MEMBERSHIP.

MASTER CAR BUILDERS' ASSOCIATION.

ELECTION OF.....

INSTRUCTIONS.

The applications of the following candidates for Life Membership have been approved by the Executive Committee.

To vote for all the names on this ballot leave it as it is — unmarked.

To vote against a nominee draw a line through his name.

NOTE.— Place card in small envelope. Seal and enclose in outer envelope.

BALLOT FOR ASSOCIATE MEMBERSHIP.

MASTER CAR BUILDERS' ASSOCIATION.

ELECTION OF.....

INSTRUCTIONS.

The applications of the following candidates for Associate Membership have been approved by the Executive Committee.

To vote for all the names on this ballot leave it as it is — unmarked.

To vote against a nominee draw a line through his name.

NOTE.— Place card in small envelope. Seal and enclose in outer envelope.

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ARTICLE X.

SECTION 1. At the first session of each annual meeting an Auditing Committee, consisting of three members, not officers of the Association, to be nominated by any members who do not hold office, shall be elected.

The Auditing Committee shall examine the accounts and vouchers of the Treasurer and Secretary, and certify whether they have been found correct or not. After the performance of this duty they shall be discharged by the acceptance of their report by the Association.

ARTICLE XI.

THE RECOMMENDATION OF STANDARDS.

SECTION 1. Any proposition recommending the adoption of standard constructions or practice shall be in writing and be accompanied by drawings, if the latter are necessary for a clear understanding of the subject. Such proposition shall then be submitted to the Association for discussion, after which a vote shall be taken to decide whether the proposition shall be submitted for decision by letter ballot to all the representative members. If decided in the affirmative, the Secretary, within three months from the time the vote of the Association is taken on such measure, shall send by mail to each member a blank ballot, and a copy of the proposed recommendation, with a report — to be approved by the Executive Committee — of the discussion thereon. Such ballot to be filled up, signed and remailed to the Secretary, who shall count all the ballots received within thirty days from the date that they were sent to members, and he shall then announce the vote in such manner as the Executive Committee may prescribe. Any recommendation securing two-thirds of the votes cast shall be adopted by the Association.

SEC. 2. All reports, resolutions and recommendations involving the use, or proposed use, by railroad companies, of any device or process which forms the subject matter of any existing patent, shall first be submitted to the Executive Committee, and shall be submitted to the Association only by the Executive Committee.

ARTICLE XII.

ANNUAL CONTRIBUTIONS.

SECTION 1. Every member will be subject to the payment of annual dues, to be assessed at each annual meeting, to defray the necessary expenses of the Association, provided that no assessment shall exceed $8. Each representative member shall pay, in addition to his own dues so assessed, the same amount for each additional vote to which he is entitled.

Such dues shall be payable when the amount thereof is announced by the President at each annual meeting, and no member who is one year in arrears shall be entitled to a voice in the Association. The name of any member who is three years in arrears for dues may be struck from the list of members at the discretion of the Executive Committee.

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Life members shall be exempt from the payment of dues.

Upon resignation or termination of membership, dues already paid will be refunded, prorated by months elapsed between the time of annual assessment and the date membership ceases.

ARTICLE XIII.

AMENDMENTS.

SECTION 1. This Constitution may be amended at any regular meeting by a two-thirds vote of the members present, provided that written notice of the proposed amendment has been given at a previous meeting at least six months before.

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BY-LAWS.

TIME OF MEETING.

I. The regular annual meeting of the Association shall be held in June of each year. The date of the commencement of such meeting shall be fixed by the Executive Committee, acting jointly with the Executive Committee of the American Railway Master Mechanics' Association.

HOURS OF SESSION.

II. The regular hours of session shall be arranged by the Executive Committee and published on the program for each meeting.

PLACE OF MEETING.

III. The place for each annual meeting shall be fixed at least six months before the day for the annual meeting by the Executive Committee, acting jointly with the Executive Committee of the American Railway Master Mechanics' Association.

QUORUM.

IV. At any regular meeting of the Association fifteen or more members entitled to a vote shall constitute a quorum.

ORDER OF BUSINESS.

V. The business of the meetings of the Association shall, unless otherwise ordered by a vote, proceed in the following order:

1. Reading the minutes of the last meeting.
2. Address by the President.
3. Report of Secretary and Treasurer.
4. Assessment and announcement of annual dues.
5. Appointment of Resolutions and other committees.
6. Election of Auditing Committee.
7. Unfinished business.
8. New business.
9. Reports of committees.
10. Reading and discussing questions propounded by members.
11. Routine and miscellaneous business.
12. Election of officers.
13. Adjournment.

RULES GOVERNING THE CONDITION OF, AND REPAIRS TO, FREIGHT CARS FOR THE INTERCHANGE OF TRAFFIC.

VI. The revision of the Rules of Interchange shall be the special order of business at 10 o'clock A.M. on the second day of each annual convention, unless otherwise ordered.

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QUESTIONS FOR DISCUSSION, SPECIAL ORDER OF.

VII. Unless otherwise ordered, the discussion of questions proposed by members shall be the special order at 12 o'clock M. of each day of the annual meeting.

DECISIONS.

VIII. The votes of a majority of the members present shall be required to decide any question, motion or resolution which shall come before the Association, unless otherwise provided.

DISCUSSIONS.

IX. No questions or discussions as to the regulation of wages, or the amount to be paid by the day, week or month, or the number of hours that shall constitute a day's work of employees, shall be allowed at the meetings of this Association.

X. No patentees or their agents shall be admitted to the meetings of the Association for the purpose of advocating the claims of any patent, or patentee, unless by unanimous consent.

XI. No member shall speak more than twice in the discussion of any question until all the other members who want to speak and have not been heard have spoken.

XII. Before a motion to close or end a discussion is submitted to a vote, the Chairman shall ask the question whether any other members desire to speak on the subject matter now before the convention, and he shall give an opportunity to any who wish to speak to say so. The motion shall then be submitted to a vote, and the proceedings be governed in accordance with the action of the Association.

REPORTS.

XIII. The report of the Committee on Nominations and of all standing and special committees must be in the office of the Secretary not later than April 1, in order that the same can be printed and advance copies issued by May 1.

XIV. Committee reports which do not reach the Secretary in time for printing and issuing by May 1, will be referred to the Executive Committee, to decide whether the report shall be submitted to the convention.

XV. The chairman of standing and special committees will read an abstract of the report of the committee before the convention, together with whatever additional data may have been accumulated after April 1, to the date of the convention.

XVI. The members of standing or special committees who may individually or collectively submit a minority report must prepare the same so that it can be issued with the report of the majority of the committee, to substitute for the majority report in the event the commttee should so decide.

XVII. Each member of a standing or special committee must sign either the majority or a minority report.

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PROCEEDINGS

OF THE

Forty-Eighth Annual Convention

OF THE

Master Car Builders' Association

HELD AT

Atlantic City, N. J., June 10, 11 and 12, 1914

FIRST SESSION.

The President, Mr. M. K. Barnum, of the Baltimore & Ohio Railroad, called the meeting to order at 9:40 o'clock.

THE PRESIDENT: We would like to have the past presidents of the Master Car Builders' Association and the past presidents of the Master Mechanics' Association, and the other officers of both Associations who are present, to come to the front and take seats on the platform, and assist in the opening exercises of this convention, if you will kindly do so.

(The gentlemen came forward and took seats as requested.)

THE PRESIDENT: We will please rise while the Reverend Dr. W. Spurgeon, of the Olivet Presbyterian Church, of Atlantic City, delivers the Divine Invocation.

(Dr. Spurgeon delivered the invocation.)

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The President then read his annual address.

PRESIDENT'S ADDRESS.

To the Members:

In opening this, the Forty-eighth Annual Convention of the Master Car Builders' Association, I wish to congratulate the members upon the activity and healthy growth of your association. The work of the committees and of the Secretary has increased so much that new and larger offices became an imperative need, and satisfactory quarters were secured last fall in the Karpen Building, 900 South Michigan avenue, Chicago, where you will all be cordially welcomed whenever you visit the Windy City.

The past year has been probably the most trying on record for railroad managements in the United States, as the narrowing margin between gross earnings and expenses has compelled every official to spend most of his time studying new ways of economizing and reducing expenses without allowing deterioration in the physical condition of the property or in the quality of the service. Working under these adverse circumstances, I believe that most of you who are responsible for the equipment have obtained very creditable results; but some of the problems ahead will be more difficult to solve than any yet encountered.

One of the most important and difficult matters confronting us is the proper application and maintenance of safety appliances to conform with the Federal law and with the orders of the Interstate Commerce Commission. The data available indicate that some roads have not been equipping freight cars with safety appliances as rapidly as they must to finish the work within the time limit, or before July 1, 1916, and I wish to impress upon every one the importance of following up this part of the work as vigorously as possible. As there are over two hundred and fifty different items on a freight car which may constitute a violation of the Safety Appliance Law, it requires careful study to become familiar with them all, and it is very essential that a campaign of education be systematically pursued with car foremen, inspectors and repairmen so that they will know accurately just what the law requires with regard to each part. Every company should have a man on the Mechanical Department staff specially qualified and trained to follow up safety appliances and to act as the authority on this subject. There should also be at every shop one or more inspectors detailed to instruct and check up those who are employed in applying and repairing safety appliances.

Too much emphasis can not be placed on the importance of maintaining correctly all details of cars which have once been fully equipped with safety appliances, and in making partial repairs to cars which have not been equipped it is good practice to make the same in accordance with the law, which must ultimately be complied with in full. In cases

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of doubt as to the exact interpretation of the law, it will usually prove a safe guide if we consider why it was made and what was its intent.

Another important matter to be considered is the adding of a sufficient percentage to the labor shown on bills for car repairs to fully cover all overhead expenses, including upkeep of the plant, taxes, insurance, etc.

Companies which build and repair cars usually add from 65 to 80 per cent for overhead expenses, and there is reason to believe that railroads may be expected in the future to handle such matters on a manufacturing basis.

The growing importance of the M. C. B. Rules of Interchange has necessitated an extra afternoon session especially for the discussion of the changes which have been recommended.

In revising the Rules of Interchange it has been the aim of the Arbitration Committee to reduce as far as possible the unprofitable movement of cars and material, and also to simplify the wording and application of the rules. Some of the members have suggested that the rules ought to be renumbered and rearranged in a more logical order, and also that they be continued in force for at least two years without any change.

The first suggestion should be followed in revising the rules for the 1915 Convention, but the Arbitration Committee has not thought best to adopt it this year. The large number of suggestions for changes in the rules each year seem to indicate a necessity for their yearly revision, but after the revision proposed for 1915 it may be well to try them for two years without change.

Some members have recommended eliminating all the rules covering combinations of defects which are supposed to indicate unfair usage, namely, Rules 37 to 43, inclusive.

Some of the arguments for doing this are that the present rules tend to penalize those companies which build strong cars and to unduly favor those having weak cars, also that no satisfactory basis has been found for combinations in all-steel and steel-underframe cars. While conceding these points, the Arbitration Committee has not thought that the time was ripe for the elimination of all combinations.

On account of numerous questions received by the Secretary, the Arbitration Committee has sent out to the members interpretations of those rules which are not clearly understood, and it may be well to have a formal expression from the members as to continuing the issuing of such interpretations.

Many freight cars originally of wood construction are being practically rebuilt and strengthened with steel underframes, friction draft gear, steel ends, new roofs, new siding, etc., so that they are stronger and better than when first built and their ultimate life will be prolonged probably fifteen or twenty years. These improvements usually cost from $250 to $400 per car, a part of which is properly chargeable to Capital Account, and it seems only fair that some allowance should be made for them in figuring the depreciation when such cars are destroyed, and that those companies

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which are spending such large amounts to strengthen their cars should not be penalized for so doing, as at present. This subject is of sufficient importance to justify appointing a special committee to study and report upon it at the next convention.

While it might be possible to adopt standards for so many items that improvements in design would be discouraged, I believe that the Master Car Builders' Association has not carried standardization as far as it can profitably for its members.

The Committees on Car Construction and on Car Trucks have done something toward standardization, and the Committee on Specifications has done a large amount of valuable work which is submitted in their report for your consideration.

Some parts that might be standardized are brake beams, journal boxes for pedestal-type freight-car trucks and spring planks for steel side-frame trucks.

The Coupler Committee has continued its good work and has reduced the number to two, which they recommend for extensive tests in service, so the prospects of soon having one standard M. C. B. coupler are very good.

It would also be a great benefit if standards could be adopted for the principal dimensions of 40-ft. and 50-ft. freight cars. Some years ago the American Railway Association decided upon a standard 36-ft. box car, but almost immediately the traffic departments began to ask for a variety of different sizes, and to-day very few roads build the standard 36-ft. car.

The Committee on Retirement of 40,000 and 50,000 lb. capacity freight cars has presented a definite recommendation, which will help to improve the situation if adopted, annd it will undoubtedly bring out a full discussion.

There should be more standards for passenger-car parts, and these need not specify all details, but should cover those features which affect interchangeability.

The building of new wooden passenger cars was practically stopped a year or more ago, and most roads are applying steel underframes and ends to the older cars as fast as money can be obtained for the work, with the result that there are now 3,566 less wooden passenger cars in service than there were two years ago, so with the general use of steam heat and electric lights passenger travel on steam railroads is steadily growing safer. The fact that in 1912 the number of passengers killed in train accidents was only one for each 251,000,000 passenger miles has enabled insurance companies to pay double and triple indemnities for such accidents, and, as stated before, the conditions are steadily improving.

Our conventions always depend largely for their attractiveness and social enjoyment upon the presence of the ladies, and I wish to extend to them a most cordial welcome and the thanks of the Master Car Builders' Association for their aid in making this occasion a complete success.

Since the last convention seven of our members have taken their last

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leave of absence, and their familiar faces will be greatly missed. Special committees will be appointed to frame appropriate resolutions upon the death of the following former members:

G. H. Eaton, A. M. C. B., Canadian Pacific.
D. E. Fitzgerald, A. G. S. M. P., St. L. & S. F. Ry.
Wm. O'Herin, Supt. Machy., M. K. & T. Ry.
G. Larson, M. C. B., C. St. P. M. & O. Ry.
J. Rigby, G. A. & R. Ry., London, England.
Chas. Waughop, C. J. I., E. St. Louis.
O. F. Lang, M. C. B., U. R. T. Co., Milwaukee.

I have always felt that one of the principal benefits to be derived from attending these conventions is the excellent opportunity afforded to study the railway appliances and materials which are so well arranged and so cheerfully explained by our friends, the supplymen, and it hardly seems necessary to urge you all to give the present instructive display of exhibits, which amounts almost to a railway exposition, all the time and attention which their great merit deserves.

I wish to thank the various officers and members of committees for their able and valuable assistance in conducting the year's work and in preparing a most interesting program for this convention, and I trust that each one of you will contribute his share toward the discussions.

THE PRESIDENT: We will now have a recess for five minutes to allow any of those who wish to do so to retire, and to give us an opportunity to readjust ourselves for the business of the session.

MEMBERS REGISTERED.

The following members registered during this and other sessions of the convention:

Acker, C. B.
Acker, C. L.
Adams, T. E.
Akans, E. L.
Akans, Geo.
Albero, L. H.
Alquist, P.
Alter, Wm.
Andrews, S. B.
Anthony, F. S.
Appler, A. B.
Averill, E. A.
Ayers, A. R.
Arp, W. C.
Barba, C. E.
Barclay, F. B.
Barnum, M. K.
Barnes, P. H.
Baron, Jas.
Bawden, Wm.
Beaghen, Thos.
Beattie, J. H.
Beaumont, H. A.
Bell, R. W.
Bentley, W. F.
Blackmon, G. A.
Blair, H. A.
Bottomly, E. S.
Borrowdale, J. M.
Boutet, H.
Bowden, J. F.
Boyden, N. N.
Boyer, C. E.
Brazier, F. W.
Breyer, J. S.
Brogan, J. P.
Brown, M. G.
Bundy, C. L.
Burch, J. J.
Burnett, R. W.
Burns, T. J.
Buzzell, O. D.
Byron, A. W.
Calkins, A. E.
Carmer, J. R.

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Carleton, R. V.
Carr, W. K.
Carroll, J. T.
Carson, G. E.
Cartwright, D. J.
Case, S. T.
Caton, S. W.
Chaffee, F. W.
Chamberlain, E.
Chamberlain, J. T.
Chambers, C. E.
Chubb, O. J.
Clark, F. H.
Clark, J. J.
Coleman, J.
Cook, T. R.
Copany, A.
Cornith, A. B.
Courson, J. F.
Coutant, M. R.
Covert, M. E.
Craig, J.
Crawford, D. F.
Cromwell, O. C.
Cromwell, S. A.
Crownover, G. M.
Cyr, J. W.
Darlow, A. M.
Davis, J. H.
Davis, M. J.
Davis, W. H.
Dawson, E.
Dawson, L. L.
Deeter, D. H.
Demarest, H. N.
Demarest, T. W.
DeVoy, J. F.
Deyat, F.
Dickinson, F. W.
Dillon, S. J.
Dobson, W. E.
Dooley, W. H.
Donehue, Thos.
Drury, M. J.
Duffey, G. J.
Dunham, W. F.
Durham, Geo.
Eberle, Wm.
Eckhart, J.
Elmer, Wm.
Endsley, L. E.
England, R. H.
Ettenger, R. L.
Evans, G. I.
Everett, Ira.
Ewing, J. J.
Felton, H. E.
Ferguson, G. M.
FitsMorris, J.
Flavin, J. T.
Flory, B. P.
Flynn, W. H.
Fogg, J. W.
Fowler, G. L.
Fox, Geo. P.
Freeman, J. D.
Fritts, J. C.
Fryer, C. U.
Fuller, C. E.
Gaines, F. F.
Gardner, G. C.
Garstang, Wm.
Gernert, H. F.
Gibbs, A. W.
Giles, C. F.
Gill, C. A.
Gillespie, W.
Gillis, H. A.
Givin, E. F.
Goodnow, T. H.
Gorrell, W. T.
Gould, J. E.
Gould, R.
Graburn, A. L.
Graff, F. M.
Graham, C.
Gray, B. H.
Gray, G. M.
Greenwood, H. F.
Grewe, H. F.
Griffin, H. G.
Grieves, W. E.
Grove, Wm. F.
Hainen, J.
Hagen, Chas.
Halbert, M. W.
Hall, W. H.
Hamilton, T.
Harris, C. M.
Hartman, F. B.
Harvey, M. H.
Hendry, J.
Hennessey, J. J.
Henry, J. M.
Henry, W. C. A.
Hessenbruch, T. E.
Hill, Rufus,
Hodgson, J. L.
Hogsett, J. W.
Hoke, H. A.
Hubbell, Ira.
Hyland, W. V.
Hyndman, F. T.
Irvin, J. J.
Jackson, O. S.
Jansen, E. W.
Jaynes, R. T.
Johnson, F.
Kaderly, W. F.
Kantmann, A. G.
Kapp, W. F.
Keagy, C. O.
Keegan, J. E.
Keiser, C. B.
Kelly, J. P.
Kendig, R. B.
Kiesel, W. F.
Kilpatrick, R. F.
Kinney, M. A.
Kuhn, W. T.
LaMar, A.
Laughlin, G. F.
Laux, J. P.
Lentz, J. S.
Lewis, W. H.
Lide, C. D.
Lovell, A.
Luscombe, J. T.

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McAnnis, W. H.
McBride, B.
McCarthy, M. J.
McCuen, J. P.
McIlvaine, C. L.
McKee, G. S.
McNulty, F. M.
McRae, J. A.
MacBain, D. R.
Malthaner, W. J.
Maness, W. C.
Manning, J. H.
Meister, C. L.
Meloy, H. C.
Mengel, J. C.
Meredith, H. P.
Michael, J. B.
Miller, E. A.
Miller, Geo. A.
Milliken, Jas.
Milton, J. H.
Monfee, A. J.
Montgomery, H.
Moore, B. R.
Muhlfeld, J. E.
Munroe, J. T.
Murrian, W. S.
Mussey, W. H.
Nash, J. H.
New, W. E.
Nolan, J. P.
O'Brien, J. J.
O'Brien, Wm. J.
O'Hearne, J. E.
Ord, L. S.
Osman, H. L.
Owens, W. H.
Painter, J. H.
Parks, O. J.
Perine, D. M.
Peterson, W. D.
Pfahler, F. P.
Phillips, C.
Pilcher, J. A.
Pomeroy, L. R.
Porter, C. B.
Powers, M. J.
Pratt, E. W.
Quayle, Robt.
Rink, Geo.
Robb, J. W.
Robbins, F. S.
Robertson, E. J.
Rockfellow, W. E.
Rosing, W. H. V.
Rossum, T. H.
Rusling, W. J.
Sasser, E. C.
Scanland, N. B.
Schlafge, Wm.
Schrader, J. R.
Schroyer, C. A.
Schultz, F. C.
Schultz, R. W.
Schwartz, C. L.
Seddon, C. W.
Selloy, S. H.
Sheafe, J. S.
Sheahan, J. F.
Shearman, C. S.
Schoemaker, C. A.
Simpson, P.
Sisco, G. E.
Slayton, C. E.
Slayton, F. T.
Small, W. T.
Smeltzer, G. H.
Smethurst, T.
Smith, B. T.
Smith, J. L.
Smith, M. R.
Smith, P. F.
Smith, R. E.
Smith, W. A.
Spence, A. M.
Staley, H. F.
Stewart, A.
Stoll, W. J.
Streeter, L. P.
Sumner, Eliot.
Swanson, C. M.
Sweetman, E. M.
Symons, W. E.
Taylor, J. W.
Terrell, C. H.
Thiele, C. F.
Thomas, H. T.
Thomas, I. B.
Thomas, J. J.
Thompson, W. O.
Thomson, Geo.
Thomson, S. G.
Tinker, J. H.
Tollerton, W. J.
Totten, E. C.
Trapnell, F. W.
Treleaven, Thos. A.
Vaughan, H. H.
Wahlen, J.
Waters, J. J.
Watkins, H. W.
Weitzel, H.
Westervelt, Jos.
White, H. J.
Wieseckel, G. F.
Wilson, J. W.
Wilson, R. D.
Wood, E. H.
Wright, O. C.
Wright, R. V.
Wyman, R. L.
Wymer, J.
Yates, L. L.
Young, Chas. D.
Joung, J. P.
Younger, T. W.
Zweibel, C. A.

THE PRESIDENT: The first business on the program is the approval of the minutes of the last convention.

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MR. F. W. BRAZIER (N. Y. C. & H. R. R. R.): I move that the minutes of the last meeting be approved as printed.

Motion seconded.

THE PRESIDENT: The motion is made and seconded that the proceedings of the last convention be approved as printed. You have all seen them. All those in favor please say "aye"; contrary minded, "no." The motion is carried.

The next business on the program is the report of the Secretary and Treasurer.

THE SECRETARY: Before reading my report, I would like to read a letter to the members which I received this morning. It is rather interesting, and I believe you will think so. It is as follows:

KANSAS CITY, KAN., June 4, 1914.

Mr. J. W. Taylor, Secretary, M. C. B. Association:

DEAR SIR,— You will find under another cover a small box containing a small souvenir which I wish you to present to the Master Car Builders' Association. It can be used as a gavel, and represents one of the great matters which is being considered before the Association. It is from a car man or a common car whacker, but one who is always interested in the changes that are made at the conventions, and you know by this token that there must have been a thought somewhere in all branches of our work. If this is received by you, will you kindly mention it in some corner of the Railway Master Mechanic Journal, as I am only a common car repairman, and not worthy of praise for this.

Yours truly,

FROM KANSAS CITY, KANSAS.

THE SECRETARY: Mr. President, I have the pleasure of presenting to you the emblem — it is a gavel, the outer end of which is formed in the shape of a car wheel.

MR. E. W. PRATT (C. & N. W. Ry.): I move that the appreciation and thanks of this Association be extended to the common everyday car man from Kansas City.

THE PRESIDENT: The motion has been made and seconded that a vote of thanks be extended to the donor of this gavel. In announcing the motion, I would like to say that I consider the presentation of this gavel is a very fine tribute to the Master Car Builders' Association. This represents the interest of the man who is right next to those who, so to speak, are doing the

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daily work of repairs on our cars, and their interest is what is needed more than anything else to-day to make a success, in every possible respect, of the maintenance of the equipment on our railroads in the best possible manner and at the least possible expense. You have heard the motion made and seconded that a vote of thanks be passed to the donor of this gavel; all in favor say "aye"; contrary-minded, "no." The motion is carried.

THE SECRETARY: I may say, Mr. President, that the books of the Secretary were examined in Chicago last Saturday by the public accountants there, and they promised to have a letter, showing the result of their examination, in my hands this morning. The mail does not get in from Chicago until ten o'clock, so I presume the letter is over in the hotel office now. I might say, however, that the books were examined and found satisfactory by the chartered accountants.

THE PRESIDENT: I presume that letter will be presented later on.

THE SECRETARY: I will present the letter later on during the session. The Secretary's report is as follows:

SECRETARY'S REPORT.

To the President and Executive Committee of the Master Car Builders' Association:

I submit herewith detailed statement, showing the condition of the organization both as to its membership and finances. These cover the year closing June 2, 1914, the date when the books of the Secretary were closed.

ACTIVE MEMBERS.

Membership, June, 1913		433
Transferred to representative	4	
Dropped, out of railroad service	1	
Resigned	5	
Deaths	6	
Dropped, nonpayment and mail returned	14	
		30
		403
Transferred from representative	1	
New members	18	
		19
Total		422

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REPRESENTATIVE MEMBERS.

Membership, June, 1913		414
Dropped, account of absorption of roads	2	
Dropped, account of successor appointed	19	
Dropped	1	
Deaths	1	
		23
		391
New representatives, new roads	20	
New representatives, old roads	21	
Transferred from active	4	
		45
Total		436

ASSOCIATE MEMBERS.

Membership, June, 1913	13

LIFE MEMBERS.

Membership, June, 1913	20

TOTAL MEMBERSHIP.

Active membership	422
Representative members	436
Associate members	13
Life members	20
Total	891

The Secretary has advice of the death of Messrs. G. H. Eaton, D. E. Fitzgerald, Wm. O'Herin, J. Rigby, Chas. Waughop and O. F. Zeug, active members; Gustave Larson, representative member.

It is suggested that committees be named to prepare obituaries for incorporation in the report of the Proceedings.

The number of cars represented in the Association, compared with last year, is as follows:

June, 1914	2,785,894
June, 1913	2,713,656
Increase	72,238

A detailed statement of dues collected from members is attached hereto and forms part of the report.

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RECEIPTS.

By dues collected from members	$16,284.00
" sale of Rules of Interchange	2,154.02
" " " Air Brake and Signal Instructions	27.45
" " " Proceedings	1,986.47
" " " Rules for Loading Materials	1,940.90
" " " Arbitration Cases	57.00
" " " Lithcgraphs	3.60
" " " Standards	534.86
" " " Tank Car Specifications	22.80
" interest on bank balance	79.05
" rent	644.25
" collection from badges	770.00
Total	$24,504.40

EXPENSES.

Paid exchange	$ 26.05
" expenses convention, 1913	786.66
" expenses of committees	439.54
" stamps	462.46
" office supplies and expenses	318.15
" printing	15,176.91
" office assistants	395.80
" salary of Secretary	3,600.00
" zinc cuts	950.42
" office rent	1,188.60
" expressage	295.16
" office furniture	368.80
" reporting convention, 1913	192.95
" tracings and blue-prints	277.90
" surety bonds, Secretary	25.00
Total	$24,504.40

The following is a list of railroads and private car lines which have given notice during the year of their desire to become subscribers to the

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rules of interchange governing freight cars, and their names will appear in the list of subscribers when the revised code is issued.

Middletown & Unionville R. R.
Lake Erie, Franklin & Clarion R. R.
Joplin & Pittsburgh Ry.
Ft. Dodge, Des Moines & Southern R. R.
Houston Belt & Terminal Ry. Co.
Abilene & Southern R. R.
Oklahoma, New Mexico & Pacific Ry.
Michigan & Chicago Ry.
Ohio Electric Ry.
St. Johns River Terminal Co.
Tooele Valley Ry.
Chicago, Ottawa & Peoria Ry.
Penna. Steel Co.
Wabash Pittsburgh Terminal Ry.
Western Chemical Mfg. Co.
Keith Car Co.
Capitol Refining Co.
Snyder Car Line.
Kentucky & Indiana Terminal R. R.
Sherwin-Williams Co.
Manistique & Lake Superior R. R.
Chicago, Rock Island & Gulf Ry.
Memphis, Dallas & Gulf R. R.
San Benito & Rio Grande Valley Ry.
J. A. Dewar Co.
Des Moines Union Ry.

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LIST OF DUES COLLECTED FROM MEMBERS.

1913.			
June	10	O. C. Cromwell.	$ 4.00
"	10	C. H. Rae.....	4.00
"	12	J. Baron	4.00
"	12	J. W. Hoggsett	4.00
"	12	C. H. Terrell..	5.00
"	12	W. J. Fisher...	4.00
"	12	Chas. Swanson.	5.00
"	12	J. T. Luscombe	5.00
"	15	Henry Gennert.	5.00
"	15	R. D. Wilson..	5.00
"	15	J. H. Painter..	5.00
"	16	J. B. Michael..	5.00
"	16	J. W. Wilson..	5.00
"	16	S. W. Combs..	5.00
"	16	J. E. Vittum...	5.00
"	16	T. M. Ramsdell	5.00
"	16	C. W. Mattox.	5.00
"	16	R. D. Shearer.	5.00
"	16	A. E. Smith...	5.00
"	17	H. J. Smith...	8.00
"	17	W. T. Gorrell..	5.00
"	17	J. P. Brogan...	5.00
"	17	H. A. McConville	5.00
"	17	E. T. Millar...	5.00
"	17	A. Craig	5.00
"	17	C. E. Peiffer...	5.00
"	17	A. N. Spence..	5.00
"	17	W. J. Stoll....	5.00
"	17	E. Pendleton...	5.00
"	17	F. Deyat	5.00
"	17	H. F. Grewe...	8.00
"	17	W. H. Dunlap.	4.00
"	17	G. V. Wagoner	4.00
"	17	B. F. Smith....	4.00
"	17	S. J. Dillon....	4.00
"	17	N. A. C. Francis	4.00
"	17	E. Chamberlain	4.00
"	17	J. H. Leyonmark	4.00
Carried forward.....			$ 184.00

Brought forward.....			$ 184.00
June	10	R. T. Shea.....	4.00
July	3	Geo. Gibbs	5.00
"	3	A. F. Peterson.	15.00
"	3	W. J. Knox....	5.00
"	3	H. L. Osman..	15.00
"	3	John Doyle ...	5.00
"	3	J. S. Fraser....	5.00
"	3	G. E. Carson..	5.00
"	3	T. H. Curtis...	5.00
"	3	H. W. Marsh..	10.00
"	3	E. A. Benson..	5.00
"	3	J. H. Beattie...	5.00
"	3	A. E. Calkins..	5.00
"	3	H. E. Bennett.	5.00
"	3	J. J. Burch....	5.00
"	3	H. J. Davis....	5.00
"	3	W. F. M. Goss.	5.00
"	3	E. S. Hedgcock	5.00
"	3	J. E. Keegan..	20.00
"	3	S. F. Miller...	5.00
"	3	J. J. Monahan.	5.00
"	3	S. P. Robins...	5.00
"	3	W. H. V. Rosing	5.00
"	3	Wm. Shone ...	5.00
"	3	W. W. Atterbury	5.00
"	3	J. A. Carney...	5.00
"	3	T. Dunbar	5.00
"	3	E. F. Guthridge	5.00
"	3	G. R. Henderson	5.00
"	3	John Howard..	5.00
"	3	E. W. Jansen..	5.00
"	3	R. B. Kendig..	5.00
"	3	C. N. Littell...	5.00
"	3	Jas. Stockton..	5.00
"	3	G. A. Miller...	10.00
"	3	W. O. Thompson	5.00
"	3	C. A. Wall.....	5.00
Carried forward.....			$ 413.00

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Brought forward.....			$ 413.00
July	3	F. J. Walsh....	5.00
"	3	W. H. Wilson.	5.00
"	3	C. W. Seddon.	40.00
"	3	F. Van Slyck..	5.00
"	3	E. M. Tewkesbury	5.00
"	3	C. L. Schwartz	10.00
"	3	Geo. F. Laughlin	80.00
"	3	J. R. Craig....	5.00
"	3	J. P. Boyle....	5.00
"	3	B. E. Merwin..	9.00
"	3	D. S. Smith....	5.00
"	3	T. H. Watkins.	10.00
"	11	S. Porcher	5.00
"	11	Wm. Elmer ...	55.00
"	11	P. L. Grove...	5.00
"	11	W. H. Sitterly.	5.00
"	11	P. M. Hammett	50.00
"	11	Thos. Colgate..	10.00
"	11	C. E. Chambers	120.00
"	11	L. T. Koons...	5.00
"	11	E. K. Horton..	5.00
"	11	C. F. Gregory..	10.00
"	11	C. G. Root.....	5.00
"	11	F. T. Sullivan.	5.00
"	11	G. J. Sweringen	45.00
"	11	S. Smith	5.00
"	11	R. E. Smith...	160.00
"	11	F. W. Taylor..	5.00
"	11	L. H. Turner..	135.00
"	11	W. Kells	5.00
"	11	J. J. Anderson.	5.00
"	11	J. F. Sheeby...	5.00
"	11	R. V. Sage....	10.00
"	11	G. W. Rink....	5.00
"	11	T. E. Keyworth	5.00
"	11	C. F. Roberts..	9.00
"	11	E. Dawson	5.00
"	11	G. P. Fox.....	5.00
"	11	A. W. Gibbs...	5.00
"	11	Robt. Quayle...	5.00
"	11	C. B. Young...	5.00
Carried forward.....			$ 1,296.00

Brought forward.....			$ 1,296.00
July	11	E. L. Brown..	5.00
"	11	C. M. Gage....	15.00
"	11	E. H. Gorey...	1.00
"	11	P. F. Smith...	40.00
"	11	C. E. Slayton..	10.00
"	11	D. M. Perine..	55.00
"	11	H. H. Brigham	5.00
"	11	F. F. Gaines...	55.00
"	11	Geo. Van Brimer	5.00
"	11	J. R. Gordon..	5.00
"	11	C. H. Hartley..	5.00
"	11	M. A. Kinney..	65.00
"	11	R. B. Little....	5.00
"	11	L. Sergeant ...	5.00
"	11	H. Bartlett	145.00
"	11	E. J. Dedman..	5.00
"	11	W. E. Dobson.	10.00
"	11	N. L. Friese...	5.00
"	11	R. C. Pew.....	5.00
"	11	C. L. Bundy...	5.00
"	11	J. J. Acker.....	5.00
"	11	R. S. Miller...	5.00
"	11	R. E. Mercur..	10.00
"	11	C. M. Mileham	10.00
"	11	H. E. Newcomet	5.00
"	11	W. E. New....	5.00
"	11	C. S. Morse...	60.00
"	11	C. F. Morgan..	5.00
"	11	A. E. Manchester	5.00
"	11	B. R. Moore...	30.00
"	11	J. H. Manning.	100.00
"	11	W. H. Nuttall.	5.00
"	21	F. C. Cleaver...	20.00
"	21	T. H. Goodnow	314.00
"	21	W. H. Dooley.	85.00
"	21	R. G. Cox.....	15.00
"	21	F. R. McFeatters	35.00
"	21	C. S. Gaskill...	5.00
"	21	F. W. Trapnell.	5.00
Carried forward.....			$ 2,471.00

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Brought forward.....			$ 2,476.00
July	21	C. R. McKinsey	5.00
"	21	H. H. Vaughan	5.00
"	21	J. R. Carmer...	5.00
"	21	L. S. Cates....	5.00
"	21	P. S. Everett..	10.00
"	21	J. B. Fick.....	5.00
"	21	Wm. Garstang.	140.00
"	21	C. E. Boyer...	5.00
"	21	J. F. Courson..	5.00
"	21	J. M. James...	55.00
"	21	D. F. Knapp...	5.00
"	21	W. R. McKeen.	5.00
"	21	R. C. Gemmell.	5.00
"	21	R. H. Krebs...	5.00
"	21	H. H. Maxfield	5.00
"	21	F. A. Miller...	5.00
"	21	Jos. Milliken...	55.00
"	21	E. F. Needham	120.00
"	21	A. P. Prendergast	55.00
"	21	F. S. Robins...	5.00
"	21	F. F. Small....	10.00
"	21	A. S. Sternberg	5.00
"	21	Eliot Sumner..	5.00
"	21	J. K. Brassell..	5.00
"	21	E. G. Chenowith	9.00
"	21	F. S. Cuthbert.	5.00
"	21	John Horrigan.	60.00
"	21	G. T. Glover...	5.00
"	21	T. A. Lawes...	5.00
"	21	A. L. Morgan..	5.00
"	21	T. V. Wagoner	5.00
"	21	C. L. Acker....	5.00
"	21	G. C. Bishop...	15.00
"	21	G. F. Hess.....	40.00
"	21	Wm. Bawden..	5.00
"	21	J. J. O'Brien..	5.00
"	21	J. C. Ramage...	5.00
"	21	H. F. Staley...	25.00
"	21	S. S. Stiffey...	40.00
"	21	J. F. Dunn.....	50.00
Carried forward.....			$ 3,285.00

Brought forward.....			$ 3,285.00
July	21	J. J. Deitche...	5.00
"	21	C. F. Collins...	5.00
"	21	G. P. Goodrich	10.00
"	21	A. R. Fay.....	5.00
"	21	M. Marea	5.00
"	21	W. N. Cox....	10.00
"	21	J. J. Hennessey	330.00
"	21	A. C. Miller...	5.00
"	21	F. M. McNulty	5.00
"	21	P. G. Sanborn.	5.00
"	21	Jos. Westervelt	5.00
"	21	J. H. Wright..	5.00
"	21	J. S. Cook.....	15.00
"	21	W. D. Forster.	5.00
"	21	J. W. Lawlor..	5.00
"	21	W. E. Rockfellow	5.00
"	21	G. W. Wildin..	205.00
"	21	T. W. Demarest	270.00
"	21	C. E. Fuller...	115.00
"	21	G. M. Gray....	50.00
"	21	B. P. Flory....	40.00
"	21	W. C. A. Henry	155.00
"	21	H. M. Carson..	5.00
"	21	M. Jungling ...	10.00
"	21	W. C. Arp.....	50.00
"	21	S. D. Freshman	5.00
"	21	C. B. Keiser...	5.00
"	21	A. LaMar	5.00
"	21	H. E. Graham.	5.00
"	21	J. M. Milliken.	10.00
"	21	F. C. Schultze..	5.00
"	21	O. J. Parks....	5.00
"	21	G. E. Sisco....	5.00
"	21	A. C. Adams..	5.00
"	21	J. S. Lentz....	230.00
"	21	J. T. Carroll...	5.00
"	21	J. H. Davis....	5.00
"	21	H. C. May.....	40.00
"	21	J. W. Robb....	10.00
"	21	G. A. Schmoll..	5.00
"	21	E. J. Searles...	5.00
"	21	P. Simpson....	10.00
Carried forward.....			$ 4,970.00

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		Brought forward.....	$ 4,970.00
July	21	A. Stewart.....	265.00
"	21	C. F. Thiele...	5.00
"	21	I. B. Thomas..	55.00
"	21	W. J. Tollerton	265.00
"	21	J. C. Wilder...	5.00
"	21	C. D. Barrett..	5.00
"	21	J. W. Cross...	5.00
"	21	G. N. Dow....	5.00
"	21	T. E. Adams..	65.00
"	21	R. F. Blackwell	5.00
"	21	I. Everett	5.00
"	21	M. F. Covert..	5.00
"	21	C. F. Giles.....	220.00
"	21	Thos. Beaghen.	65.00
"	21	H. E. Felton...	5.00
"	21	O. H. Helbig..	5.00
"	21	G. R. Joughins	70.00
"	21	J. E. Libby....	45.00
"	21	J. E. Maupin..	15.00
"	21	J. T. Fite.....	5.00
"	21	W. C. Ransom.	5.00
"	21	F. E. Rose.....	5.00
"	21	J. S. Silverwright	5.00
"	21	J. W. Small...	95.00
"	21	A. W. Byron..	5.00
"	21	W. W. Cahill..	5.00
"	21	F. H. Eddy....	5.00
"	21	I. C. Hubbell...	10.00
"	21	I. N. Kalbaugh	15.00
"	21	J. F. Kehrman.	10.00
"	21	A. R. Kipp....	5.00
"	21	T. R. Cook....	5.00
"	21	D. F. Crawford	5.00
"	21	Thos. Fraser...	10.00
"	21	H. C. Manchester	150.00
"	21	C. M. Maxwell.	5.00
"	21	H. Montgomery	30.00
"	21	J. G. Neuffer..	60.00
"	21	J. C. Persch...	5.00
"	21	A. P. Whitall..	13.00
		Carried forward.....	$ 6,538.00

		Brought forward.....	$ 6,538.00
July	21	W. B. Dennis..	5.00
"	21	G. T. Rohrback	5.00
"	21	E. C. Hawkins.	5.00
"	21	A. Nordberg ..	5.00
"	21	O. R. Hale....	5.00
"	21	E. D. Lamb...	5.00
"	21	A. M. White...	10.00
"	21	C. A. Ross.....	5.00
"	21	C. A. Schroyer.	5.00
Aug.	1	J. W. Cyr.....	215.00
"	1	Thos. Roope...	110.00
"	1	E. W. Burgis..	5.00
"	1	L. L. Dawson..	5.00
"	1	C. I. Halbert...	5.00
"	1	L. B. Jones....	5.00
"	1	O. S. Lamb....	5.00
"	1	D. O'Leary....	5.00
"	1	J. Purcell	5.00
"	1	Thos. Ross ...	5.00
"	1	Wm. Schlafge..	270.00
"	1	A. H. Reeder..	5.00
"	1	W. A. Smith...	5.00
"	1	F. H. Stark....	5.00
"	1	H. T. Thomas.	5.00
"	1	J. J. Thomas...	5.00
"	1	A. M. Waitt...	5.00
"	1	J. J. Waters...	95.00
"	1	S. K. Dunkle..	5.00
"	1	J. F. Enright..	100.00
"	1	G. M. Ferguson	5.00
"	1	A. O. Herman.	5.00
"	1	M. M. Lloyd...	5.00
"	1	W. G. McCullogh	5.00
"	1	F. W. Brazier..	410.00
"	1	J. J. Clark.....	5.00
"	1	Max Goodrich.	5.00
"	1	W. P. McGraw	10.00
"	1	R. V. Massey..	10.00
"	1	J. S. Motherwell	5.00
"	1	W. B. Ott.....	5.00
"	1	C. Phillips	30.00
		Carried forward.....	$ 7,953.00

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Brought forward.....			$ 7,953.00
Aug.	1	B. Reiley.....	5.00
"	1	L. Pfafflin	5.00
"	1	G. S. Shafer...	5.00
"	1	H. J. Small....	210.00
"	1	T. A. Treleaven	5.00
"	1	F. W. Chaffee..	5.00
"	1	M. R. Coutant.	5.00
"	1	J. H. Gano....	5.00
"	1	Wm. Moir	5.00
"	1	A. G. Huckin..	5.00
"	1	A. Kearney ...	5.00
"	1	M. J. Kelley...	5.00
"	1	M. J. Kelley...	5.00
"	1	T. J. Burns....	140.00
"	1	A. C. Deverell.	5.00
"	1	R. H. Dyer....	5.00
"	1	J. H. Clark....	5.00
"	1	W. H. Flynn..	5.00
"	1	T. Hamilton...	5.00
"	1	W. H. Lewis...	255.00
"	1	M. J. Lower...	5.00
"	1	A. J. Monfee..	5.00
"	1	J. F. Newhouse	5.00
"	1	J. C. Riddell...	5.00
"	1	C. S. Rutle....	5.00
"	1	C. A. Shoemaker	15.00
"	1	F. T. Stow.....	5.00
"	1	C. H. Seabrook	25.00
"	1	S. G. Thomson	230.00
"	1	H. W. Bleeze..	5.00
"	1	H. T. Bruck...	10.00
"	1	Thos. Donehue.	5.00
"	1	N. N. Boyden..	5.00
"	1	H. A. Gray....	5.00
"	1	A. G. Kantmann	60.00
"	1	E. A. Gilbert..	5.00
"	1	J. F. Graham..	45.00
"	1	G. A. Hancock.	180.00
"	1	E. A. Bridges..	5.00
"	1	A. M. Darlow.	25.00
"	1	F. E. Davisson	20.00
"	1	S. J. Dillon...	5.00
Carried forward.....			$ 9,318.00

Brought forward.....			$ 9,318.00
Aug.	1	J. Baron.....	1.00
"	1	F. J. Harrison.	90.00
"	1	J. C. Hiltabidle	5.00
"	1	H. R. Kilpatrick	5.00
"	1	G. Larson	65.00
"	1	H. S. Lloyd...	5.00
"	1	E. A. Miller...	65.00
"	1	J. T. Munroe..	5.00
"	1	F. Naylor	10.00
"	1	W. J. O'Brien.	30.00
"	1	Thos. Paxton..	20.00
"	1	W. E. Price...	5.00
"	1	D. Reid	5.00
"	1	W. H. Richmond	10.00
"	1	J. L. Smith....	25.00
"	1	J. J. Thomas..	60.00
"	1	C M Tritsch..	55.00
"	1	H. C. VanBuskirk	45.00
"	1	R. L. Wyman.	15.00
"	1	J. L. Hodgson.	5.00
"	1	E. W. Pratt...	5.00
"	15	R. P. Rasbridge	5.00
"	15	W. E. Knight..	9.00
"	15	G. E. Smart...	9.00
"	15	J. H. Tinker..	150.00
"	15	Amos Turner..	5.00
"	15	T. W. Stingley.	5.00
"	15	Chas. Andrus..	10.00
"	15	A. C. Mather.	5.00
"	15	T. N. Kucher..	10.00
"	15	E. O. Smith...	5.00
"	15	C. A. Lindstrom	5.00
"	15	O. F. Wagenhorst	5.00
"	15	L. P. Streeter.	5.00
"	15	S. A. Cromwell	5.00
"	15	T. B. Irvin....	15.00
"	15	J. P. Nolan....	5.00
"	15	J. E. Gould...	20.00
"	15	M. G. Brown.	10.00
"	15	M. W. Lewis..	5.00
Carried forward.....			$10,137.00

Digitized by Google

Brought forward.....			$10,137.00
Aug.	15	W. W. McFarland	5.00
"	15	R. W. Barrett.	5.00
"	15	R. K. Reading	635.00
"	15	J. R. Alexander	5.00
"	15	J. C. Mengel..	5.00
"	15	W. F. Eberle..	5.00
"	15	R. W. Geesey.	5.00
"	15	C. O. Keagy..	5.00
"	15	J. M. Henry..	5.00
"	15	J. P. Yergy...	5.00
"	15	M. J. Davis...	5.00
"	15	W. F. Kapp..	14.00
"	15	J. J. Tatum...	5.00
"	15	H. A. Blair...	5.00
"	15	P Conniff	5.00
"	15	E. B. Miller...	5.00
"	15	N. A. C. Francis	1.00
"	15	S. H. Selloy..	5.00
"	15	C. H. Montague	5.00
"	15	John Wahlen..	5.00
"	15	W. E. Dunham	5.00
"	15	F. L. Long....	5.00
"	15	E. E. Lillie...	5.00
"	15	M. L. Diaz....	9.00
"	15	H. M. Curry..	235.00
"	15	G. F. Levesque	10.00
"	15	J. J. Connolly.	25.00
"	15	J. T. Wallis...	5.00
"	15	C. L. McIlvaine	5.00
"	15	A. S. Vogt....	5.00
"	15	R. L. Kleine..	5.00
"	15	C. E. Barba..	5.00
"	15	H. A. Hoke...	5.00
"	15	W. F. Kiesel..	5.00
"	15	H. M. Ramsay	5.00
"	15	C. D. Young..	5.00
"	15	W. D. Minton.	5.00
"	15	P. H. Barnes..	5.00
"	15	L. E. Finegan.	5.00
"	15	H. A. Beaumont	5.00
"	15	W. F. Bentley.	5.00
Carried forward.....			$11,236.00

Brought forward.....			$11,236.00
Aug.	15	F. H. Clark....	475.000
"	15	W. J. Robider.	5.00
"	15	A. D. Frye....	5.00
"	15	Jas. Fitzmorris	5.00
"	15	C. F. Merrill..	5.00
"	15	A. A. Harris..	10.00
"	15	Jas. Carr	10.00
"	15	J. P. Dolan...	5.00
"	15	Wm. Youlds ..	5.00
"	28	F. S. Brown...	5.00
"	28	G. H. Emerson	255.00
"	28	P. Alquist	5.00
"	28	H. Hardie	5.00
"	28	W. L. Kellogg	130.00
"	28	S. W. Caton..	5.00
"	28	J. L. Greatsinger	5.00
"	28	C. A. Brandt..	5.00
"	28	S. K. Dickerson	5.00
"	28	P. J. O'Dea...	5.00
"	28	D. R. MacBain.	50.00
"	28	H. J. Tierney.	5.00
"	28	C. H. Prescott.	5.00
"	28	G. W. Seidel..	40.00
"	28	Jos. Chidley...	5.00
"	28	Geo. Thomson.	5.00
"	28	J. McMullen...	5.00
"	28	P. P. Mirtz...	5.00
"	28	A. S. Phelps..	5.00
"	28	J. F. Sugrue..	5.00
"	28	C. H. Quinn..	5.00
"	28	J. W. Senger..	5.00
"	28	E. N. Peden...	5.00
"	28	L. L. Yates....	70.00
"	28	C. W. Murphy.	5.00
"	28	D. C. Smith..	5.00
"	28	J. E. O'Hearne	65.00
"	28	J. H. Leyonmark	5.00
"	28	W. V. Knowlton	5.00
"	28	G. E. Coutant.	15.00
"	28	A. Sinclair ...	5.00
Carried forward.....			$12,506.00

Digitized by Google

	Brought forward.....		$12,506.00
Aug.	28	T. R. McLeod.	5.00
"	28	W. C. Manness	100.00
"	28	T. A. Brown..	10.00
"	28	W. Gillespie...	20.00
"	28	W. J. Shreve..	5.00
"	28	W. C. Ables..	5.00
"	28	G. H. Bussing.	15.00
"	28	C. W. Diemon.	10.00
"	28	W. J. Carothers	10.00
"	28	J. Coleman ...	85.00
"	28	C. M. Stansbury	5.00
"	28	C. J. Thornton.	5.00
"	28	R. W. Burnett.	485.00
"	28	S. A. Charpiot.	5.00
"	28	E. S. Fitzsimmons	5.00
"	28	M. M. Lloyd..	4.00
"	28	J. R. Onderdonk	5.00
"	28	C. H. Sommer.	5.00
"	28	R. J. Sullivan..	5.00
"	28	W. J. Wilcox..	5.00
"	28	M. Campbell ..	10.00
"	28	D. R. MacBain	5.00
"	28	E. S. Hume...	5.00
"	28	D. R. MacBain	310.00
"	28	H. Boutet	5.00
Sept.	26	R. L. Doolittle	20.00
"	26	J. F. Sheahan.	5.00
"	26	J. W. Muggah.	10.00
"	26	J. Peters	5.00
"	26	S. J. Duffey...	5.00
"	26	Geo. Shuey....	5.00
"	26	F. J. Bridger..	5.00
"	26	H. N. Demarest	5.00
"	26	T. J. O'Donnell	5.00
"	26	W. H. McAnnis	5.00
"	26	W. G. Murrin.	5.00
"	26	R. N. Dodge..	5.00
"	26	P. T. Mooney.	13.00
"	26	F. Mertsheimer	5.00
"	26	H. H. Harvey.	5.00
"	26	L. Greaven ...	9.00
"	26	J. B. Finley...	10.00
"	26	J. L. Koeppen.	5.00
	Carried forward.....		$13,762.00

	Brought forward.....		$13,762.00
Sept.	26	O. S. Jackson..	45.00
"	26	C. Setzekorn..	20.00
"	26	F. T. Slayton..	40.00
"	26	F. Tanaka	5.00
"	26	A. G. Trumbull	5.00
"	26	F. Zeleny	5.00
"	26	Jos. Coleman...	215.00
"	26	J. Cullinan	5.00
"	26	J. R. Gould...	220.00
"	26	E. A. Averill..	5.00
"	26	H. C. Bossinger	5.00
"	26	J. J. Hemphill.	5.00
"	26	W. F. Kaderly.	15.00
"	26	A. Lovell	5.00
"	26	H. M. McDonald	5.00
"	26	E. Posson	360.00
"	26	N. P. Ramsey.	5.00
"	26	R. W. Schulze.	5.00
"	26	R. V. Wright..	5.00
"	26	Thos. Smethurst	15.00
"	26	F. K. Bretz...	5.00
"	26	C. L. Meister..	5.00
"	26	A. L. Rossetter	15.00
"	26	H. Mori	5.00
"	26	Jas. Marchbanks	5.00
Nov.	10	T. W. Heintzelman	5.00
"	10	J. N. Hampton.	5.00
"	10	J. A. Pilcher..	9.00
"	10	C. J. Wymer..	5.00
"	10	W. J. Alter...	5.00
"	10	D. W. Cross..	20.00
"	10	J. M. Borrowdale	5.00
"	10	R. W. Bell....	5.00
"	10	E. C. Totten..	5.00
"	10	T. A. Foque...	135.00
"	10	T. Yeager	5.00
"	10	C. M. Harris..	5.00
"	10	J. L. Cunningham	5.00
"	10	W. B. Combs..	5.00
	Carried forward.....		$15,006.00

Digitized by Google

Brought forward.....			$15,006.00
Nov.	10	J. H. Nash....	5.00
"	10	M. F. McCarra	10.00
"	10	W. T. Kuhn...	10.00
"	10	J. E. Osmer...	5.00
"	10	A. G. Field...	5.00
"	10	D. H. Kinter..	5.00
"	10	F. Hopper	5.00
"	10	J. H. Macha...	5.00
"	10	J. W. Hogsett.	1.00
"	10	J. L. Poole....	5.00
"	10	G. R. Lovejoy.	5.00
"	10	A. J. Borie....	5.00
"	10	J. H. Baker...	9.00
"	10	W. J. Hillyer..	5.00
"	10	J. H. Deibert..	5.00
"	10	J. H. Milton...	5.00
"	10	E. B. Tilt.....	5.00
"	10	J. Hainen	5.00
"	10	O. C. Wright..	5.00
"	10	R. Tawse	20.00
"	12	W. J. Hartman	5.00
"	12	W. E. Symons.	5.00
"	25	A. R. Ayers...	5.00
"	25	S. A. Neville..	5.00
"	25	W. E. Looney.	5.00
"	25	H. Halvorsen..	5.00
"	25	J. T. Cochrane	4.00
"	25	H. F. Crewe..	15.00
"	25	W. P. Richardson	5.00
"	25	E. F. Givin....	5.00
"	25	B. W. Mahon..	5.00
Dec.	2	F. W. Dickenson	5.00
"	2	M. A. Kimmett	5.00
"	13	Wm. O'Herin..	5.00
"	13	R. G. Cox.....	5.00
"	13	E. H. McCann.	5.00
"	13	J. S. Lauder..	5.00
"	13	W. H. Davis..	5.00
"	13	B. H. Gray....	10.00
"	13	A. D. Smith...	5.00
"	13	A. L. Graburn.	135.00
Carried forward.....			$15,380.00

Brought forward.....			$15,380.00
1914.			
Jan.	6	H. J. White...	5.00
"	6	B. N. McCully.	5.00
"	6	A. J. Cota.....	5.00
"	6	E. S. Bottomly	5.00
"	6	W. K. Carr...	4.00
"	6	G. L. Fowler..	5.00
"	6	J. P. Callahan.	5.00
"	6	L. T. Nichols.	5.00
"	6	A. C. Hayes...	5.00
"	6	Jas. Fitzmorris	5.00
"	6	R. T. Jaynes..	5.00
"	20	J. J. Ewing...	5.00
"	20	Geo. Rommel..	5.00
"	20	F. B. Hartman.	5.00
"	20	J. P. Young....	5.00
"	20	J. O. Johnson.	5.00
"	20	G. M. Crownover	5.00
"	20	W. K. Carr...	1.00
"	20	C. H. Gilman..	5.00
"	20	J. J. Martin...	5.00
"	20	W. S. Morris..	5.00
"	20	T. M. Neel, Jr.	5.00
"	20	Wm. Miller ...	5.00
"	20	T. W. Upton..	5.00
"	20	M. H. Haig...	5.00
"	20	J. M. Rosenbury	10.00
Feb.	2	J. Craig	5.00
"	2	G. A. Blackman	5.00
"	2	P. G. Smith...	5.00
"	2	B. F. Elliott...	5.00
"	2	G. McCormick.	105.00
"	2	J. C. Martin...	5.00
"	2	R. Tawse	25.00
"	2	J. H. Martin..	5.00
"	2	C. J. McMaster	5.00
"	2	A. C. West....	5.00
"	26	D. B. Middagh.	5.00
"	26	J. J. O'Brien...	5.00
"	26	W. G. Brown.	5.00
"	26	K. F. Nystrom	5.00
Carried forward.....			$15,700.00

Digitized by Google

Brought forward.....			$15,700.00
Feb.	26	J. C. Fritts....	5.00
"	26	J. J. Maginn..	10.00
"	26	J. R. Gould...	5.00
"	26	J. H. Schnepel.	5.00
"	26	H. S. Lloyd...	4.00
"	26	H. W. Ridgeway	5.00
"	26	S. Lynn	5.00
"	26	F. J. Brown...	5.00
"	26	J. H. Franke..	5.00
"	26	H. L. Millis...	10.00
"	26	W. H. Robinson	13.00
Mar.	7	J. H. McConnel	5.00
"	7	J. E. Muhlfeld.	5.00
"	7	A. J. Fries....	5.00
"	7	J. B. Randall..	5.00
"	7	W. L. Tracy...	5.00
"	7	T. H. Russum.	5.00
"	7	C. M. Boswell.	5.00
"	7	E. T. King....	5.00
"	7	H. P. Durham.	10.00
"	7	J. W. Fogg...	5.00
"	7	W. H. Raymond	5.00
"	7	G. B. Hunt....	5.00
"	26	V. P. Safford.	5.00
"	26	H. P. Meredith	13.00
"	26	W. J. Stoneburner	5.00
"	26	A. Copany	5.00
"	26	A. Benham ...	5.00
"	26	J. Hendry	5.00
"	26	T. E. Parker..	5.00
"	26	H. S. Phillips.	5.00
"	26	R. Tawse	25.00
"	26	T. G. Ferguson	5.00
"	26	M. Frierson...	5.00
Apr.	11	T. E. Hessenbruck	5.00
"	11	W. M. Bosworth	5.00
"	11	J. H. Schroeder.	5.00
"	11	F. Johnson ...	4.00
"	11	F. W. Stubbs..	5.00
Carried forward.....			$15,944.00

Brought forward.....			$15,944.00
Apr.	11	L. E. Endsley..	5.00
"	11	J. F. DeVoy..	5.00
"	11	B. Julien	5.00
"	11	J. H. Green...	5.00
"	11	G. Thompson..	5.00
"	11	B. T. Smith...	5.00
"	11	W. H. Mussey.	5.00
"	11	W. M. Fleishel.	9.00
"	11	H. LaRue	5.00
"	14	A. B. Appler..	5.00
"	14	F. L. Fox.....	5.00
"	14	J. M. Shackford	5.00
"	14	C. U. Fryer...	5.00
"	14	M. J. Drury...	5.00
"	14	C. D. Lide.....	5.00
"	14	J. P. McCuen..	5.00
"	14	J. A. McRae...	5.00
"	14	F. P. Pfahler..	5.00
"	20	T. W. Adams..	9.00
"	20	D. J. Cartwright	5.00
"	20	J. R. Schrader.	5.00
"	20	H. L. Lewis...	5.00
"	20	J. P. Maloney.	5.00
"	24	C. E. Spoor...	5.00
"	24	J. A. Berg....	5.00
"	24	W. S. Murrian	5.00
"	24	G. S. McKee..	20.00
"	24	F. B. Barclay..	5.00
May	12	C. B. Acker...	5.00
"	12	G. F. Egbers..	5.00
"	12	S. P. Seifert..	5.00
"	12	J. A. Hughes..	9.00
"	12	J. E. O'Brien..	10.00
"	12	W. T. Foster.	5.00
"	12	R. L. Ettenger.	5.00
"	18	G. W. Lillie...	5.00
"	18	F. T. Hyndman	4.00
"	18	O. D. Buzzell..	5.00
"	18	A. Kipp	5.00
"	18	C. A. Zweibel.	5.00
"	18	A. A. McGregor	9.00
"	18	F. W. Mahl...	5.00
Carried forward.....			$16,189.00

Digitized by Google

Brought forward.....		$16,189.00
May 18	J. Eckhart.....	5.00
" 18	R. Hill	5.00
" 22	M. G. Bock....	9.00
" 22	W. G. McCullogh	4.00
" 22	T. J. Murphy..	9.00
" 22	F. T Hyndman	1.00
" 22	R. T. Shea....	5.00
" 27	E. F. Turney..	9.00
Carried forward.....		$16,236.00

Brought forward.....		$16,236.00
May 27	O. C. Cromwell	5.00
" 27	P. McDonell...	5.00
" 27	A. O. Herman	5.00
" 27	E. H. Gorey...	5.00
" 27	H. Mandeville.	9.00
June 2	C. Hagen	5.00
" 2	Geo. Akans ...	4.00
" 2	E. Chamberlain	5.00
" 2	J. P. Kelley...	5.00
Total		$16,284.00

THE SECRETARY: The Treasurer's report is as follows:

TREASURER'S STATEMENT.

John S. Lentz, Treasurer, in account with Master Car Builders' Association:

June 16, 1913, balance in treasury.....$627.91
June 10, 1914, balance in treasury..... 627.91

JNO. S. LENTZ,
Treasurer.

ATLANTIC CITY, N. J., June 10, 1914.

THE PRESIDENT: A motion to refer this report to an auditing committee is in order.

MR. BRAZIER: Mr. President, I move it be referred to the Auditing Committee for their approval.

Motion seconded.

THE PRESIDENT: It is moved and seconded that the report of the Treasurer be referred to an auditing committee; those in favor say "aye"; those opposed, "no." Carried.

THE SECRETARY: An auditing committee should be named now, Mr. President. Three would probably be enough.

THE PRESIDENT: Nominations are now in order for members of the Auditing Committee; will somebody make nominations for the three members?

(The following gentlemen were thereupon nominated by different members:

Mr. T. J. Burns, of the Michigan Central R. R.; Mr. F. H. Clark, of the Baltimore & Ohio R. R., and Mr. E. W. Pratt, of

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the C. & N. W. Ry. It was thereupon moved and seconded that the nominations be closed.)

THE PRESIDENT: All those in favor of the Secretary casting the ballot for the three nominees say "aye"; contrary, "no." Carried.

THE SECRETARY: Mr. President, I have cast the ballot. I would like to say that the reports of the Treasurer are here on the desk for inspection at any time.

Mr. President, I have the following letter addressed to the Master Car Builders' Association and the American Railway Master Mechanics' Association:

Kindly notify the railroad members of the Master Car Builders' and Master Mechanics' Associations, desiring transportation home over the lines of the Pennsylvania Railroad Company or the Pennsylvania Lines West of Pittsburgh, that such transportation will be provided if they hand their requests to you.

In accordance with the requirements of the law, this transportation must be limited to bona fide railroad officials only, and can not include members of boat lines, car lines, or switching roads operated by industries.

Yours very truly,

J. T. WALLIS,
General Supt. Motive Power, Pennsylvania R. R. Lines East of Pittsburgh.

D. F. CRAWFORD,
General Supt. Motive Power, Pennsylvania Lines West of Pittsburgh.

If any of the members desire transportation over the Pennsylvania returning home if they will give me their names I will try to arrange for the transportation.

THE PRESIDENT: Gentlemen, it seems to me that the kindness of the Pennsylvania, in particular, and one or two of the other Eastern roads, is worthy of special recognition by the Association. It certainly has been very helpful in bringing members to the conventions, and I would suggest that this would be a very appropriate time to take some action on it.

MR. F. F. GAINES (C. of Ga. Ry.): Mr. President, I would make a motion that the thanks of the Association be tendered

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to the representatives of the Pennsylvania, and also to the Central of Jersey, and the Philadelphia & Reading.

Seconded.

THE PRESIDENT: You have heard the motion that the thanks of the Association be tendered to these roads for their favors to the Association in the way of transportation. All those in favor say "aye"; opposed, "no." Carried.

THE SECRETARY: Mr. President and gentlemen, at a meeting held last evening, to cover the necessary increase in the expenses of the Association during the year the Executive Committee recommended that the dues of representative members be increased to $7 per vote, the dues of active and associate members to remain as at present, $5 per vote.

THE PRESIDENT: A motion to concur in that action of the Executive Committee will be in order.

Motion made and seconded.

THE PRESIDENT: It is moved and seconded that this action of the Executive Committee be concurred in by the Association. Is there any discussion? If not, all those in favor say "aye"; opposed, "no." Carried.

THE SECRETARY: Mr. President, at this time the President should appoint a committee on Correspondence, Resolutions, Obituaries, etc. I know he has been pretty busy this morning, and I would suggest that he be given a little more time.

THE PRESIDENT: I will be glad to have a little more time because I did not get through the meeting last evening until after 12 o'clock, and I started pretty early this morning on matters that required attention, so I will make the announcement a little later.

THE SECRETARY: In accordance with Article 6, Section 4 of the Constitution, the Executive Committee would suggest the names of ten members from which to select a committee on nominations for next year: Messrs. F. W. Brazier, A. W. Gibbs, F. H. Clark, T. H. Goodnow, F. F. Gaines, J. T. Wallis, W. H. Lewis, James Coleman, G. W. Wildin, and J. J. Hennessey. A suitable placard will be displayed Friday morning in this room,

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so that the members may make their choice of five members for the committee.

Mr. President, Mr. C. A. Schroyer, formerly representative in this Association for the Chicago & North Western Railway, and a past-president of this Association, desires to be placed on the list of life members of this Association. This application meets the approval of the Executive Committee, and it instructs the Secretary to place his name on the ballot for life membership.

That name will also be placed on the placard for balloting Friday morning.

The application of Mr. W. S. Morris for life membership was approved, and the Secretary instructed to submit the name of Mr. Morris for ballot, to the convention, with the approval of the Executive Committee. That name will also be placed on the placard for ballot Friday.

The proposal of Mr. C. A. Seley for Associate Member, which was read at the convention last year, has laid over the requisite length of time, and having met the approval of the Executive Committee, will be placed on the placard also for ballot Friday.

Mr. President, the name of Prof. L. W. Wallace, Purdue University, Lafayette, Ind., has been suggested for Associate membership. Professor Wallace succeeds Professor Ensley at Purdue, Professor Ensley going to Pittsburgh University. This notice, under the Constitution, will have to lie over until the next convention.

That is all I have, Mr. President.

THE PRESIDENT: That brings us to the discussion of reports. The first on the list is the Report of the Committee on Nominations. Mr. Brazier, I believe, is Chairman of that Committee.

MR. BRAZIER: Mr. President and members. I think it is useless to read the committee's report; each of you have a copy of it. The only good thing about the report is that every man on it is a man whom it has given the committee great pleasure to nominate. The committee feels that the dignity of the Association will be maintained fully by them if they are elected. The report is as follows:

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REPORT OF THE COMMITTEE ON NOMINATIONS.

To the Members:

Your committee would suggest the following:

For President.

D. F. CRAWFORD, G. S. M. P., Penna. Lines West.

For First Vice-President.

D. R. MACBAIN, S. M. P., L. S. & M. S. Ry.

For Second Vice-President.

R. W. BURNETT, G. M. C. B., Canadian Pacific Ry.

For Third Vice-President.

C. E. CHAMBERS, S. M. P., C. R. R. of N. J.

For Treasurer.

J. S. LENTZ, M. C. B., Lehigh Valley R. R.

For Executive Members.

J. C. FRITTS, M. C. B., D. L. & W. R. R.
R. E. SMITH, G. S. M. P., Atlantic Coast Line.
H. T. BENTLEY, S. M. P. & M., C. & N. W. Ry.

F. W. BRAZIER, Chairman,
A. W. GIBBS,
F. H. CLARK,
C. E. FULLER,
F. F. GAINES,
Committee.

THE PRESIDENT: A motion to receive this report to be placed before the Association, in due time, will be in order.

MR. PRATT: I move it be received and placed before the Association for proper balloting.

Motion seconded.

THE PRESIDENT: It is moved and seconded that the report of the Nominating Committee be received and placed before the Association for action in due time; all those in favor say "aye"; opposed, "no." Carried.

THE SECRETARY: I would like to say, Mr. President, that the ballots containing the names of the selections made by the Nominating Committee will be submitted to you Friday morning, so that you can ballot on them.

THE PRESIDENT: The next report is that of the Committee on Revision of Standards and Recommended Practice, T. H. Goodnow, of the Chicago & North Western Ry., is chairman.

Mr. Goodnow presented the report, as follows:

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REPORT OF COMMITTEE ON REVISION OF STANDARDS AND RECOMMENDED PRACTICE.

To the Members:

After due consideration of present Standards and Recommended Practices of the Association, together with replies from members to the Circular of Inquiry, also requests involving Standards presented through the Secretary, your committee respectfully submits the following report:

JOURNAL BOX AND DETAILS. STANDARD.

Page 826. Sheet M. C. B. 2.

(1) A member calls attention to the note to the left-hand side of the plan of journal box, suggesting that same be eliminated, and the drawing corrected to show the 7⅜-in. dimension over all, as per Plate 3-B, Proceedings, 1891.

Your committee concurs and Secretary is instructed to correct.

JOURNAL BEARINGS. STANDARD.

Pages 826-829.

(2) For Journals, 3¼ by 7 in. Sheet M. C. B. 3.
For Journals, 4¼ by 8 in. Sheet M. C. B. 6.
For Journals, 5 by 9 in. Sheet M. C. B. 9.
For Journals, 5½ by 10 in. Sheet M. C. B. 12.

A member suggests, for the benefit of the designating between solid and filled journal bearings, that the word "Solid" or "Filled" be made a standard marking on the bearing.

Your committee does not concur in this recommendation.

JOURNAL-BEARING WEDGE. STANDARD.

Pages 826-829.

(3) For Journals, 3¼ by 7 in. Sheet M. C. B. 3.
For Journals, 4¼ by 8 in. Sheet M. C. B. 6.
For Journals, 5 by 9 in. Sheet M. C. B. 9.
For Journals, 5½ by 10 in. Sheet M. C. B. 12.

A member suggests that journal-box wedges be provided with hole through front flange of wedge for all size journals, to facilitate the removal of wedge by use of packing hook.

Your committee does not concur in the recommendation.

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JOURNAL-BEARING WEDGE. STANDARD.

Pages 826-829.

(4) For Journals, 5 by 9 in. Sheets M. C. B. 7 and 9.
For Journals, 5½ by 10 in. Sheets M. C. B. 10 and 12.
For Journals, 6 by 11 in. Sheets M. C. B.—A and A-2.

RECOMMENDED PRACTICE.

A member calls attention that above wedges should be shown with downward projecting lips at the front of the wedge, similar to the wedge shown on Sheet 6 for the 4¼ by 8 in. journal.

Your committee concurs and Secretary is instructed to have drawings corrected.

JOURNAL-BEARING WEDGE. STANDARD.

Pages 826-829.

(5) For Journals, 3¾ by 7 in. Sheet M. C. B. 3.
For Journals, 4¼ by 8 in. Sheet M. C. B. 6.
For Journals, 5 by 9 in. Sheet M. C. B. 9.
For Journals, 5½ by 10 in. Sheet M. C. B. 12.

A member calls attention to journal-bearing wedge, with recommendation that the solid wedge only be made M. C. B. Standard.

Your committee does not concur in the recommendation, as it refers to the 3¾ by 7 in. and 4¼ by 8 in., but does concur as regards the 5 by 9 in. and 5½ by 10 in., and suggests the elimination of note from Sheets 9 and 12 permitting the skeleton wedge.

WHEEL-FLANGE THICKNESS GAGES, FOR NEW WHEELS. STANDARD.

Page 840. Sheet M. C. B. 16.

(6) A member calls attention to the fact that the gage can not be reproduced from the dimensions as shown.

Your committee refers this to the Committee on Car Wheels.

WHEEL-DEFECT AND WORN COUPLER-LIMIT GAUGE. STANDARD.

Page 840. Sheet M. C. B. 16.

(7) A member calls attention in connection with Rule 68 in the Interchange Code that there is no dimension on this gage to provide for the 2-in. flat spot.

Your committee refers this to the Committee on Car Wheels.

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LIMIT GAUGE FOR REMOUNTING CAST-IRON WHEELS. STANDARD.

Page 841. Sheet M. C. B. 16-A.

(8) A member calls attention that the letter "G" should be added at top of flange on the diagram covering the application of limit gage to secondhand wheels with high flanges.

Your committee concurs and Secretary is instructed to have this done.

SAFETY APPLIANCES. STANDARD.

Pages 908-935. Sheets M. C. B. 19 and 19-A to 19-P.

(9) A member suggests that the Association adopt a standard ratchet wheel fit on all brake masts.

Your committee does not concur, calling attention that this is covered by Plate A, Federal Regulations.

SAFETY APPLIANCES — UNCOUPLING RODS. STANDARD.

Pages 908-935. Sheets M. C. B. 19 and 19-A to 19-P.

(10) A member suggests that the Association adopt a standard uncoupling rod.

Your committee does not concur in the recommendation.

SAFETY APPLIANCES — FREIGHT-TRAIN CARS. STANDARD.

Pages 908-935. Sheets M. C. B. 19 and 19-A to 19-P.

(11) A member calls attention to the brake chains as shown on Federal Plate A, M. C. B. Sheets 19-A and 23-A, and suggests that Plate 19-A be again revised, omitting the dimensions, showing the length of the link, and the words "$\frac{7}{16}$-in. minimum and $\frac{1}{2}$ in. preferable" should be added to denote the size of material of the enlarged link.

Your committee does not concur in this recommendation, but does recommend that on Sheet 19-A the word "preferable" be omitted opposite the dimension "$\frac{7}{16}$ in.," and also, "$\frac{3}{8}$-in. minimum" be omitted for brake chain, which will make this correspond with the brake chain, as shown on Sheet M. C. B. 23-A, from which the brake chain can be omitted, the Secretary being instructed to change accordingly.

UNCOUPLING ARRANGEMENTS FOR M. C. B. COUPLERS. RECOMMENDED PRACTICE.

Pages 954-955. Sheet M. C. B. 19-B.

(12) A member calls attention to second paragraph, which reads that uncoupling arrangements were made to conform to requirements of United States Safety Appliance Acts, as shown on Sheets 19-A and 19-B. The reference to Sheet 19-A should be omitted, as this pertains only to the brake mast and brake chain.

Your committee agrees and Secretary is instructed to correct.

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CENTER PLATES. STANDARD.

Page 935. Sheet M. C. B. 20.

(13) A member suggests that the Association adopt standard top and bottom center plates for each capacity car.

Your committee does not concur in this recommendation.

CENTER PLATES. STANDARD.

Page 935. Sheet M. C. B. 20.

(14) A member calls attention to the clearance between the body and truck center plates, which is ⅛ in., and suggests that this clearance be increased to ¼ in.

Your committee does not concur in the recommendation.

AUTOMATIC COUPLER YOKE. STANDARD.

Page 942. Sheet M. C. B. 23-A.

(15) A member suggests that the rear of coupler yoke be changed to be formed with ⅞ in. radius at inside corners and fitted with 1 in. filler block, wrought iron or steel, having 1-in. radius ends, the same to be riveted to back end of pocket with 1¾-in. countersunk rivet.

Your committee concurs in this recommendation.

SIGNAL-LAMP SOCKET. STANDARD.

Page 956. Sheet M. C. B. 26.

(16) A representative of the American Car & Foundry Company calls attention that this is shown as having a total length of 3⅞ in., while this is indicated in 1910 Proceedings, Sheet B, with over-all length of 3⅜ in.

Your committee acknowledges the error and instructs the Secretary to make necessary correction.

SIGNAL-LAMP SOCKET. STANDARD.

Page 956. Sheet M. C. B. 26.

(17) Referring the action of the 1912 and 1913 conventions, in regard to standard location, after fully considering same,

Your committee recommends that this be 9 ft. 6 in. approximately from top of rail to bottom of slot, and so located that the axis of the socket is 45 deg. with center line of car. This in view of the clearances of railroads, size of markers and lens, etc., which are at such variances that it is not practicable to establish a fixed location transversely.

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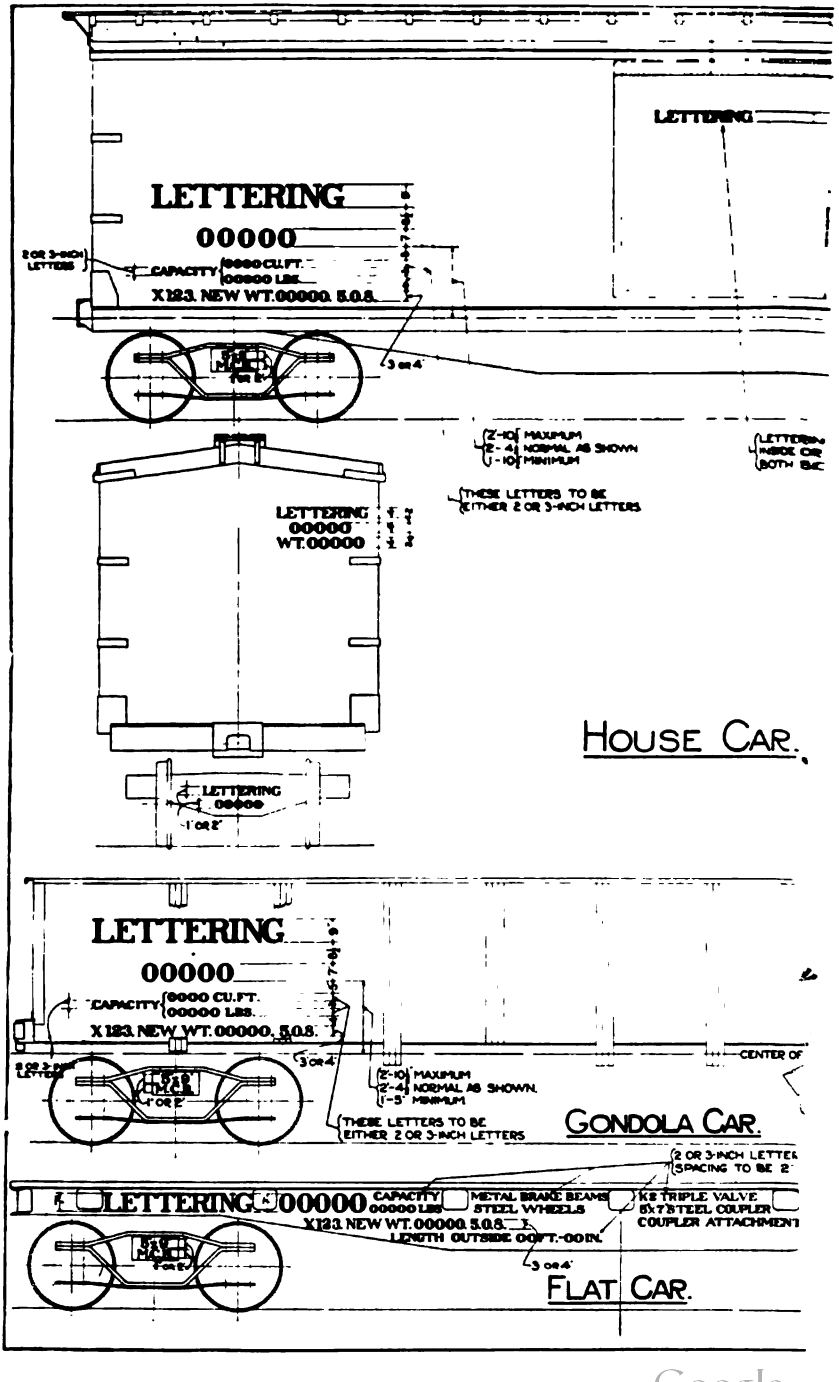

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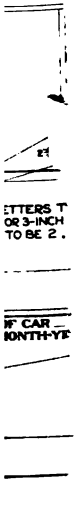

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SIDING, FLOORING, ROOFING AND LINING. STANDARD.

Sheet M. C. B. 26.

(18) A member calls attention to the section of 5¼-in. roofing and lining, which should be changed to show tongue cut back 3/32 in. on the under side, to agree with action of 1913 convention.

Your committee agrees and Secretary is instructed to correct.

LETTERING AND MARKING OF CARS. STANDARD.

Pages 957-958. Sheet M. C. B. 26.

MARKING OF FREIGHT-EQUIPMENT CARS. STANDARD.

Pages 959-969. Sheet M. C. B. 26-A.

(19) The lettering and marking of freight equipment, as indicated in above text and sheets, was delegated to us for revision.

Your committee presents revised Sheet M. C. B. 26-A to cover, and further, that the information as to marking is permissible with the use of metal badge plates. Letters to be not less than 1/8 in. in relief, and 1/8 in. bar or staff.

BOX-CAR SIDE-DOOR FIXTURES. STANDARD.

Page 1060. Sheets M. C. B. 30 and 30-A.

(20) A member submits a plan showing outside door arrangements to take the place of the outside door, as at present shown, calling attention that this is incomplete in details, particularly as to top hanger and door track.

Your committee refers this to the Committee on Car Construction.

BOX-CAR SIDE DOOR. STANDARD.

Page 1060. Sheets M. C. B. 30 and 30-A.

(21) A member suggests that the Association adopt a box-car side door of standard size.

Your committee does not concur in the recommendation.

LOADING RULES. STANDARD.

Pages 967-1040.

(22) Letter of General Managers' Association of the Southeast, as follows:

"We have before us copy of your Circular No. 22 to your members,

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requesting suggestions for revision of Standards and for Recommended Practices.

"We are profoundly impressed with the necessity for devising standard practices to govern the interline loading of commodities, and while we are not entirely sure that yours is altogether the proper Association to work this out, but certainly you are very closely connected therewith, through the fact that you already have a set of rules governing long materials, etc.; great damage is being caused to side doors of box cars by improper loading, etc.

"If your Association could take hold of this question it would result in a great alleviation of the loss and damage evil."

Your committee refers this to the Committee on Loading Rules.

UNCOUPLING ARRANGEMENTS FOR M. C. B. COUPLERS. STANDARD.

Pages 954-955. Sheets M. C. B. 23-A.

(23) A member calls attention to the two links shown separate from the uncoupling attachment; should be 6¼ and 2¼ in. in length instead of 6½ and 2¾ in.

Your committee agrees and Secretary is instructed to correct.

JOURNAL BOX AND DETAILS. RECOMMENDED PRACTICE.

Page 829. Sheet M. C. B.— A-1.

(24) A member calls attention to certain omissions of dimensions, as follows:

"A $\frac{3}{16}$-in. radius should be shown at the extreme top edge of the hinge-pin lug. The distance from the center of the hinge-pin hole to the top arch-bar seat should be shown as 1 in. Distance between centers of $\frac{3}{16}$-in. radii, forming fillets between hinge-pin lug and top of box, should be shown as ¼ in. The distance from the inside top surface of box to the bottom edge of front stop lugs should be shown as ½ in. The straight distance on side of box from center line of bolt hole to where the sloping portion of box starts at the front end should be shown as 6 in. in the plan view. One-eighth in. fillets should be shown at bottom and sides of dust-guard opening instead of the sharp corners, and this should also be specified on the side edges of the center stop lugs. Center line for the hinge-pin hole to be added to the plan view, as well as a dotted line for the undercut in front of the hinge-pin lug. A dotted line should be added to the elevation running through the hinge-pin lug and representing the top surface of the box at the sides of the hinge-pin lug. The undercut on the hinge-pin lug at the top of the lid fit should be shown as ¼ in. The full vertical line representing the juncture of the front surface for the lid spring bearing and the hinge-pin lug proper,

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should be changed to show dotted below the horizontal full line representing the top edge of undercut."

Page 829. Sheet M. C. B.— A.

A member calls attention to certain omissions of dimensions, as follows:

"A full line should be added to represent the inside edge of inside dust-guard wall at the top. The distance between bottom of dust guard and dust-guard slot is shown as ¾ in.; this, we believe, should be changed to ⅞ in. by cutting off ⅛ in. of the bottom of dust guard, in order to avoid crushing the latter when jacking up box."

Page 829. Sheet M. C. B.— A-2.

A member calls attention to certain omissions of dimensions, as follows:

"Front top edge of stop lug on the wedge should be shown sharp instead of rounded. A radius should be specified at the back of the bearing surface for the journal bearings, probably about ⅛ in. would be suitable. Dotted lines should be added to the elevation of the wedge representing the vertical edges of the bearing surface on side of wedge. Full lines should be shown on plan view of journal bearing representing the sharp edges on back."

Page 829. Sheet M. C. B.— A-3.

A member calls attention to certain omissions of dimensions, as follows:

"The hole for the dust guard for 6 by 11 in. box should be shown as 7⅛ in. in diameter instead of 7¼ in., in order to conform to the M. C. B. practice represented by dust guards on Sheet 15. The distance from the center of the hole to the bottom of the dust guard should be changed to 5 in. instead of 5⅛ in., to conform to our recommendations for sheet."

Your committee concurs and Secretary is instructed to correct drawing.

JOURNAL BOX AND DETAILS. RECOMMENDED PRACTICE.

Page 829. Sheet M. C. B.— A-2.

(25) A member recommends that the journal-box lid key for 6 by 11 in. box be the same as for the 5½ by 10 in.

Your committee concurs in this recommendation.

JOURNAL BOX AND DETAILS. RECOMMENDED PRACTICE.

Page 829. Sheets M. C. B.— A, A-1 and A-2.

(26) A member suggests that journal box, bearing, wedge and lid for 6 by 11 in. journal be advanced to Standard.

Your committee concurs in the recommendation.

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JOURNAL BEARING AND WEDGE GAGES. RECOMMENDED PRACTICE.

Page 830. Sheet M. C. B.— A-3.

(27) A member suggests that journal bearing and wedge gages, also dust guard for 6 by 11 in. journal, be advanced to Standard.

Your committee concurs in the recommendation.

JOURNAL BOX AND DETAILS. RECOMMENDED PRACTICE.

Page 829. Sheet M. C. B.— A-1.

(28) A member suggests that reference in first paragraph as to material of which it is made, to be changed to read: "Material may be pressed steel or cast steel," eliminating "cast or malleable iron."

Your committee does not concur in this recommendation.

GAGE FOR MEASURING THICKNESS OF RIM OF STEEL WHEELS. RECOMMENDED PRACTICE.

Pages 849-850. Sheet M. C. B.— C-1.

(29) Attention is called to the phraseology of the second sentence, with recommendation that this be changed to read: "With this gage, it is possible to measure direct the amount of metal necessary to remove in order to restore, etc." adding the words "to remove in order" after the word "necessary."

Your committee concurs and Secretary is instructed to correct.

END FOR HOPPER-DOOR OPERATING SHAFT. RECOMMENDED PRACTICE.

Page 967. Sheet M. C. B.— F.

(30) A member suggests that this be advanced to Standard.

Your committee concurs in this recommendation.

CAST-IRON WHEELS. RECOMMENDED PRACTICE.

Pages 841-844. Sheet M. C. B.— N.

(31) A member suggests that the title and note under section of wheel should be changed to read "maximum gross weights not to exceed 95,000 lb., instead of "112,000 lb." This to agree with specifications for cast-iron wheels, also the mount for which the 4¼ by 8 in. axles was designed. Also to continue the practice of having a maximum and minimum weight of wheels shown on this plate.

Your committee refers this to the Committee on Car Wheels.

CAST-IRON WHEELS. RECOMMENDED PRACTICE.

Pages 841-844. Sheet M. C. B.— O.

(32) A member suggests that the dimension from point where ~~1/8~~ in. radius is struck and center line of flange should show 1¼ in., which

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is now left blank, also that it would be advantageous to continue the practice of having maximum and minimum weight of wheels shown on this plate.

Your committee refers this to the Committee on Car Wheels.

CAST-IRON WHEELS. RECOMMENDED PRACTICE.

Page 841. Sheet P.

(33) A member calls attention that the dimension giving the thickness of metal was omitted at the end of the $3\frac{23}{32}$ in. radius, also that it would be to advantage to continue practice of having the maximum and minimum weight of wheels shown on this plate.

Your committee refers this to the Committee on Car Wheels.

STEAM AND AIR CONNECTION FOR PASSENGER CARS. RECOMMENDED PRACTICE.

Page 1056. Sheet M. C. B.—Q.

(34) A member suggests that the 20-in. dimension between center of steam pipe and center of air signal on the cut showing steam and air connection should be underlined, as per previous practice.

Your committee agrees and Secretary is instructed to correct.

AIR-BRAKE APPLIANCES. RECOMMENDED PRACTICE.

Pages 898-899. Sheet M. C. B.—Q.

(35) A member suggests that size of cylinders and style of triple valves, adopted as Recommended Practice in 1913, be advanced to Standard.

Your committee concurs in this recommendation for all cars built after January 1, 1915, for 10-in. air-brake cylinders for freight cars weighing between 37,000 lb. and 58,000 lb. light weight, and triples K-1 for 8-in. and K-2 for 10-in. equipment.

LOCATION OF LABEL ON AIR-BRAKE HOSE. RECOMMENDED PRACTICE.

Sheet M. C. B.—Q.

(36) A member suggests that the position of the bolting lugs of air-brake hose at coupling and at nipple end, also location of air-brake hose label be advanced to Standard.

Your committee concurs in this recommendation.

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SIZE AND DIMENSIONS FOR SOLID STEEL WHEELS. RECOMMENDED PRACTICE.

Page 849. Sheets M. C. B.—R and S.

(37) A member calls attention to the section of wheel for 5½ by 10 in. axle, the dimension reading "33 in. diameter" on line A; should read "33 in. diameter" on line AB. On the section of wheel for 6 by 11 in. axle, the dimension showing the height of flange is omitted, and the dimension "2 1/16 in." should run from center of hub to center of rim, instead of the line AB. The dimension "2 1/16 in." from center line of hub to center line of rim is omitted.

Your committee refers this to the Committee on Car Wheels.

STEAM HOSE, SPECIFICATIONS FOR. RECOMMENDED PRACTICE.

Pages 1056-1059.

(38) A member calls attention to specifications for steam hose, and suggests that there be introduced the condition that the hose in test be subjected to 45 lb. pressure for 48 hours; also, that the test after steaming should not be made until twelve hours have elapsed.

Your committee refers this to the Committee on Specifications for Test of Materials.

DIAMETER OF STEEL AND STEEL-TIRED WHEELS. RECOMMENDED PRACTICE.

Page 846.

(39) A member suggests that the diameter of steel and steel-tired wheels be advanced to Standard.

Your committee concurs in this recommendation for 33-in., 36-in. and 38-in. diameters.

RECOMMENDED PRACTICE.

(40) A member suggests that the proper size of brake pipe for passenger cars, as adopted by the 1913 Letter Ballot, be advanced to Standard.

Your committee does not concur in this recommendation.

NEW SUBJECT.

(41) A member calls attention to the necessity of bringing about some action that will provide for the application of a device for preventing brake beams falling on the track, due to failure of brake hangers, preferably by the application of safety straps to the truck-spring plank.

Your committee refers this to the Committee on Car Trucks.

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NEW SUBJECT.

(42) A member suggests that the subject of galvanized brake pipe and fittings for refrigerator and coal cars, now covered by Recommended Practice, be given further consideration, with the idea of permitting sherardized fittings in addition to galvanized fittings, for the reason that in the sherardizing the threads as well as all other portions are so treated.

Your committee refers this to the Committee on Train Brake and Signal Equipment, inasmuch as their recommendation for galvanized iron fittings was rejected by the 1913 Letter Ballot.

NEW SUBJECT.

(43) A member calls attention to the index of the M. C. B. Proceedings, suggesting that it requires thorough revision and that the subject should be taken in hand and arrange to prepare a more suitable index.

Your committee concurs and Secretary is instructed to do this, which will require a more elaborate index.

DISPOSITION OF SUBJECTS CONSIDERED, AS FOLLOWS:

Suggestions not approved: 2, 3, 9, 10, 13, 14, 21, 28 and 40.

Secretary instructed to make changes or additions: 1, 4, 8, 11, 12, 16, 18, 23, 24, 29, 34 and 43.

Referred to Committee on Car Wheels: 6, 7, 31, 32, 33 and 37.

Referred to Committee on Car Trucks: 41.

Referred to Committee on Loading Rules: 22.

Referred to Committee on Car Construction: 20.

Referred to Committee on Specifications for Test of Materials: 38.

Referred to Committee on Train Brake and Signal Equipment: 42.

Referred to Letter Ballot for change in Standard or Recommended Practice: 5, 15, 17, 19, 25, 26, 27, 30, 35, 36 and 39.

T. H. GOODNOW, Chairman,
W. H. V. ROSING,
C. E. FULLER,
T. M. RAMSDELL,
O. C. CROMWELL,
O. J. PARKS,
F. F. GAINES,
Committee.

At the conclusion of the reading of the report, Mr. Goodnow said: I might say, Mr. President, that since this report was written, one of the roads has called attention to the steam hose

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label which is shown in the Proceedings of last year. The Steam Hose Committee practically adopted the same label as was shown for the air brake hose, including the word "copyrighted," and one of the roads purchasing the steam hose raised the question as to whether the label was right or not. I believe there was no action taken to copyright the steam hose label, and it was not clear to the committee whether that label should be used in its present form, but it has been included in the standards just as it was shown in the report, although there is no mention made in any place of the copyrighting of same. I mention it at this time because it is something that should be disposed of.

MR. C. E. FULLER (Union Pacific Ry.): As I understand, the use of the M. C. B. hose label on steam hose is recommended practice and not a standard, therefore its use is optional. While with air hose it is a standard of this Association the members should only use the standard M. C. B. hose with this label.

MR. GOODNOW: Of course, the label on the steam hose is not affected in interchange like the label on the air hose. It really does not carry the same significance with it, which the air brake hose label is intended to.

MR. D. F. CRAWFORD (Penna. Lines): I would like to ask Mr. Goodnow a question regarding the copyright. As I understand it, in the process of obtaining a copyright label, the copyright must specify the exact purpose of the use which is to be made of the copyrighted article; what use the Master Car Builders want to make of it. You do not state whether the copyright applies when it is used for steam hose, do you?

MR. GOODNOW: It is my understanding that in the copyrighting of the air brake hose label, it would be given to the manufacturers only who made hose under the M. C. B. specifications, and that it would be used on such hose exclusively. It was not our idea that it would apply on the steam hose. I understand, however, through the Secretary, that up to the present time he has not been able to carry out that part of the intention of the committee with respect to copyrighting the air brake hose label.

MR. CRAWFORD: As I understand it, the idea is that a manufacturer could not put the copyrighted label on a steam hose

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which was not up to M. C. B. standard. The hose must comply with all the requirements of the Association.

MR. GOODNOW: Yes, the copyright being on there, the hose must be up to the standard.

MR. CRAWFORD: That is a little different point of view from what Mr. Fuller expressed.

MR. FULLER: I did not want to convey the impression that anybody could make any kind of a steam hose and use that label. If a road orders steam hose made according to the specifications as per recommended practice of this Association, it can use the label or not, just as it pleases. There is nothing compulsory about it, because the steam hose is not used to any great extent in interchange.

MR. GOODNOW: The manufacturer would have to receive authority from the Association to use the label, if the word "copyright" is on it.

MR. FULLER: I may be wrong, but my thought is that in ordering steam hose made according to the recommended practice, I could authorize the use of the label. If I am in error, I would like to be enlightened in regard to the matter.

THE PRESIDENT: I would like the Secretary to state what the action in this matter has been, and the result which has been accomplished to date.

THE SECRETARY: Mr. President, in regard to the copyright of the air brake hose label, I have taken this matter up with a prominent patent attorney in New York, and he advises that, as an association, we can not get a copyright. We are not incorporated. He advises, however, that we can get what is called a "trademark," and an application for a "trademark" is now pending in the Patent Office. As soon as the "trademark" is issued, I shall notify the members of the change in the program. The committee, when it presented the specifications, accompanied with those specifications, a label with the word "copyrighted" on it, and we tried to get the copyright, but could not.

MR. PRATT: In order to make this matter clear, I would make a motion that when this trademark is obtained, presuming

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that it will be, that the Association grant to manufacturers the authority to apply such trademark to air brake hose and steam hose meeting its specifications.

The motion was seconded.

THE PRESIDENT: You have heard the motion, gentlemen. Is there any discussion?

MR. GOODNOW: Before that motion is put, I would like to say that it does not seem to me that the trademark or copyright label should be used on a steam hose, because a great many roads are not following the M. C. B. specifications for steam hose, but are procuring them from their own specifications, especially for head end service, getting as high as seven or eight ply hose. The idea of the copyright label on the air brake hose is to protect freight cars when they are away from home to insure that they will have a good hose put on them. The same necessity does not exist in the case of the passenger equipment, and I believe it would be better to adopt the label without any copyright, or any trademark on it, for the steam hose, on account of the difference in practice of roads in buying steam hose.

THE SECRETARY: There is one point which should be mentioned. I do not know, if we get a trademark for this label, whether we can use the same label without the trademark on it for both the steam and the air hose. We will have two types of hose, of the same kind — one a trademark hose, and the other not a trademark hose. I question whether we can use two labels.

THE PRESIDENT: It seems to me it would make a practically different label if you make any change in it. It would not be the same label.

MR. R. E. SMITH (Atlantic Coast Line R. R.): I would like to ask the Secretary if the present specifications for steam hose do not call for the application of the M. C. B. label?

THE SECRETARY: The specification for steam hose is a recommended practice, and was adopted by letter ballot last year. It calls for the application of the M. C. B. label.

MR. GAINES: I think you will remove Mr. Goodnow's objection, if the hose is made strictly in compliance with the M. C. B. specification for steam hose — whether it is standard or recom-

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mended practice, there would be no objection to putting the label on it if it met the specifications. If it is a better or poorer grade of hose, do not put the label on it.

THE PRESIDENT: Is there any further discussion on Mr. Pratt's motion? If not, all in favor of the motion say "aye"; contrary minded, "no." The motion is carried.

The report of the Committee on the Revision of Standards and Recommended Practice is now before you, and open for discussion. This action we have just taken was really subsidiary to the report, and I felt that discussion on it and the action taken, was in order.

MR. FULLER: While I am a member of this committee and approve of its action, I can not help but feel that the clearance of 1/8 in. as referred to in item 14 is entirely too restricted for center-plate clearance. I believe, especially as we are going to steel-body bolsters and truck bolsters, cast integral with the center plate, that the clearance should be increased from 1/8 in. to not less than 3-16 in. or 1/4 in.

THE PRESIDENT: Do you want to make a motion in regard to that, Mr. Fuller.

MR. FULLER: Would it be in order?

THE PRESIDENT: I think it would be. We are discussing this report, and I think it would be very proper at this time to take up the items in detail.

MR. FULLER: I have given a good deal of investigation to center plate troubles and have found in using steel body bolsters and truck bolsters, with center plates cast integral, that a limit of 1/8 in. clearance is entirely too close for foundry practice; the center pin and center plate coming out of the sand not round the clearance is restricted, which is causing a great deal of trouble. We do not feel that we should go to the expense of machining these plates, which some of us have done in the past, and I think to overcome this trouble without any inconvenience we should increase this clearance from 1/8 in. to 3-16 in. or preferably 1/4 in., and I move that the recommendation of the committee in item 14 in reference to center plates, that the clearance

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between the body and truck center plates be increased from 1/8 in. to 1/4 in. be concurred in and the matter submitted to letter ballot.

THE PRESIDENT: Is there any discussion on this point?

MR. BRAZIER: I do not think there is any question at all, that the 1/8 in. with the unevenness of metals, is not sufficient. It has been my practice to use 3/8 in. clearance, and I should certainly stand by Mr. Fuller in his contention that it should not be less than 1/4 in.

MR. FULLER: I feel that this is a very important subject, and if the members will take time to personally investigate this subject for themselves, they will, I feel, be satisfied that this clearance should be increased.

MR. R. L. KLEINE (Penn. R. R.): As the Committee on Car Trucks has the question of center plates under consideration, I will amend Mr. Fuller's motion by referring the question which he has raised on center plates to that committee.

MR. FULLER: I think the increased clearance should be taken care of by increasing the diameter of the female center plate.

THE PRESIDENT: You have heard the amendment offered by Mr. Kleine to the motion made by Mr. Fuller, the amendment being that this matter be referred to the Committee on Car Trucks. I would like to call your attention to the fact that if that is done, as matters now stand, it will defer action on the subject for another year.

MR. BRAZIER: If the matter goes to the Committee on Car Trucks, we will not get any action until next year. No matter what action you take, our road would not build any cars unless the clearance between the body and truck center plates is at least 1/4 in.

MR. PRATT: It seems to me from Mr. Fuller's additional remarks that their substance should be included in his motion. You have got to determine what you are going to do. I will call your attention to the fact that if you do decrease the center portion of the male bearing, you are decreasing the pressure per sq. in., and some of our bolsters have been so thin that the male plate has gone right through.

MR. C. A. SCHROYER (C. & N. W. Ry.): Mr. Pratt's remarks

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call to my mind a fact which I have stated before this convention a number of times, that we are putting our center plates on upside down — the female goes underneath and catches all the dust and dirt, takes the brunt of the grinding conditions produced by the dust and dirt caught in the center plate. Any one knows that you can get your clearance ¼ in., and that is the place where we need the clearance, so as to avoid this grinding action which is taking place. So far as the bearing is concerned on the male portion of the center plate, ⅛ in. reduction or even ¼ in. reduction, or even an increase of these amounts, would make no difference in that at all.

MR. FULLER: Do I understand that the Committee on Car Trucks has under consideration the question of male center plate? Do you go beyond the female plate on the truck bolster?

MR. KLEINE: Yes, the Committee on Car Trucks, in its report, has submitted recommendations for both the body and truck center plate, and if this matter is left to the Committee on Car Trucks, they can take into consideration the remarks made here, and present the same in connection with their report to letter ballot.

THE PRESIDENT: Could that be done so as to get action at this convention?

MR. KLEINE: Yes.

MR. FULLER: That would be all right, if we can get action at this convention.

THE PRESIDENT: The amendment to the motion is, that the subject of center-plate clearances be referred to the Committee on Car Trucks, with the request that they include that item in their report to this convention. Do you accept that amendment, Mr. Fuller?

MR. FULLER: That will be acceptable to me.

THE PRESIDENT: The motion, as amended, is now before you. Is there any further discussion? If not, all in favor say "aye"; contrary minded, "no." The motion is carried.

The other items contained in the report of this Committee on Revision of Standards and Recommended Practice are now open for discussion. The proper method of handling this report, as I

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understand it, would be to take up such items as you wish to discuss, making such changes as may be desired, and then adopt the report as a whole.

MR. FULLER: There is one other question I should like to raise. It is not really a very important matter, but I fail to see any necessity for stenciling the weight on the end of the car. It costs money to do it, and I doubt very much whether it is used to any very great extent. We have the weight stenciled on each side, and I would move that the stenciling of the weight on the end of the box car be eliminated.

Motion seconded.

THE PRESIDENT: It has been moved and seconded that the stenciling of the weight of the car be omitted from the end of the car.

MR. GOODNOW: Before that motion is voted on I would like to say that I am not positive, but I believe that the stenciling of the weight on the end of the car was brought about by the request of the American Railway Association. I think some years ago this Association was requested to include same in the standards, and it was added to the standards some two or three years ago. I am not sure of it, but it seems to me there was some action of that kind.

MR. FULLER: There was something of that kind, but as near as I can ascertain, it is not used, and it is a question whether it is necessary.

MR. GOODNOW: It was brought up for the reason that the men in going through the train yards, over roofs of cars, would get the weights of the cars, where it was necessary.

MR. FULLER: I believe this is one of those things that have been complied with at the request of other associations — there has not been a great deal of benefit realized and the expense is considerable. We are weighing and stenciling cars every day, and in the interest of economy, I would like to see the motion to eliminate it prevail.

MR. GAINES: As I understand Mr. Fuller's motion, it only applies to box cars. Is that correct?

MR. FULLER: House cars are the only ones that have the

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weight stenciled on the ends. One of the members has just suggested that we should add coal cars. We will not use it on coal cars, but in order to make my motion sufficiently comprehensive, I would say all cars.

MR. O. J. PARKS (Penn. Lines): The end location for weight marking on house cars was also considered an advantage for the reason that freight station platforms, etc., frequently obscure the weight marking located on the side of the car.

MR. S. G. THOMPSON (Phila. & Reading Ry.): I think we ought to have some advice from the American Railway Association before we take action on this matter. I would ask whether the lines above and below a portion of the lettering have been considered in this cut. The Association of Transportation and Car Accounting Officers asked the American Railway Association to include heavy lines above and below the portion of the stenciling in which they were interested. I believe the American Railway Association has considered the subject. As these lines are not included in this sheet, I think attention should be called to it; also to the stenciling on the ends, which our people insist on, I understand, on account of the action of the American Railway Association.

MR. KLEINE: I was a member of the Joint Committee that fixed the weight stenciling. The American Railway Association recommended having the weight stenciled on the end of the car, in addition to the sides of the car. The reason is that on scale tracks the lights at the scale houses are so trained on the car that when the car comes toward the weighman, he can read the weights stenciled on the end of the car more readily than on the side of the car. The weights have been stenciled on the end of the car for the convenience of the scale men, and on the side of the car for easy reading by inspectors and others.

MR. J. J. HENNESSEY (C. M. & St. P. Ry.): But few cars in this country have the weight stenciled on the ends. As Mr. Fuller has said, this question is simply a matter of economy and safety. We have so many various stencilings on the cars, and when a little faded it is almost impossible to tell what it means, and unless there can be a better reason shown than talked of here to-day, I believe it is extravagance to have this stenciling on the

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ends of the cars. As this cut shows the stenciling, it is very high up on the end of the car. You are advocating something which makes it necessary for the men to go between the cars.

MR. J. J. TATUM (Baltimore & Ohio R. R.): I agree with the statement made by Mr. Hennessey; I do not see any necessity for stenciling the weights on the end of the car. Two or three years ago we made an investigation to find out how many railroads stenciled the weight on the end of the car, and we found the majority of the railroads did not. We investigated as to what use the weight on the end of the cars would be, taking the matter up in the scale and hump yards, and asked the people in charge of these yards what the value of having the weight stenciled on the ends of the cars would be. We found there was a great divergence of practice in handling the various yards — in some yards the weight was taken from the sides, and in others from the ends of cars, but we did find generally over the entire system that the effect of stenciling the weight on the end of the car, unless the car was placed on the shop track for the purpose — which can not be done in view of the number of cars we weigh — it placed the lives of the men in jeopardy when they undertook to stencil the weights of the cars on the end, and we decided that we would omit the weight on the end of the car, principally from the viewpoint of safety to the men, for the reason that it was of no especial advantage to the transportation department. I hope that the Association will decide, as standard or recommended practice, that the stenciling of the weight on the end of cars should be eliminated.

MR. SCHROYER: I hope that Mr. Fuller's motion will prevail. I dislike to disagree with Mr. Hennessey, and for once I am with him this time. There is more in the matter of putting the weights on the ends of the cars than has been mentioned. It is the general practice everywhere in weighing cars to chock the side of the car on the scale side. If you add the weights on the ends of the cars, it necessitates the use of a ladder for the men to get up near to the top of the car to enter the weights on the ends of the car, and mistakes are frequently made in stenciling the proper weights on the two sides and the ends of the car. If we require the use of the ladder in entering the weights on the ends of the

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car, we increase the amount of work to be done to a considerable extent, and we very materially increase the liability to making errors in the stenciling of the weights.

MR. C. E. CHAMBERS (C. R. R. of N. J.): I am in hearty accord with doing away with the unnecessary stenciling, but, regardless of the fact that this convention may disapprove of having the weight stenciled on the end of the car, it is a matter of transportation requirement, and sooner or later, the weights will be stenciled on the ends of the car just the same. We are doing many things to-day, not because we want to do them, but because there is some transportation reason for them. We are requested to do them by the transportation department.

THE PRESIDENT: It seems to me this is the proper place to bring up all these questions and consider them pro and con. If sufficient force is demonstrated, from the mechanical end, it may be that we will be able to persuade the operating or other departments, that the stenciling on the end of the car is not worth what it costs; that the objections to it are greater than the advantages. It may be worth while to bring these points out.

MR. PRATT: As I understand it, it was thought, subsequent to the making of the original motion, that it would be only courteous, if not polite, to take this matter up with the American Railway Association, before submitting it to letter ballot; and I would like to amend the motion so that the Executive Committee shall consider the remarks made at this meeting, and that this motion, when carried, authorizes them to present the matter to the American Railway Association, and to letter ballot if it can be so arranged.

THE PRESIDENT: We should send a recommendation with it.

MR. PRATT: This ballot will be our recommendation as I take it.

MR. FULLER: I do not think there is any question about that. Perhaps I had better change the wording of my motion to cover the matter more clearly. I will therefore submit this motion: That it is the sense of this Association that the stenciling of weights on the ends of freight cars carries with it an element of danger, and further is unnecessary, and that it is the unan-

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imous recommendation of this Association, that it should be eliminated.

THE PRESIDENT: Do you wish to substitute that for the original motion?

MR. FULLER: Yes, I will do that. If there is any complication, as it relates to the American Railway Association, or the Car Service Association, it can be cared for by the Executive Committee. From the information I have been able to obtain I do not think there are any complications.

MR. HENNESSEY: Mr. President, I will second the motion, as that is a substitute for his original motion.

THE PRESIDENT: Mr. Fuller, would your motion carry with it the idea that the matter should be taken up with the American Railway Association before final action, or what was your view on that?

MR. FULLER: As Mr. Pratt mentioned the point of taking it up with the American Railway Association, if his opinion is concurred in, then my motion would be to take such action.

MR. BRAZIER: It seems to be a very simple matter. If this is one of our own rules we can kill it right here; but if the American Railway Association recommended it to us, then, in courtesy to them, we should take it up with them, as Mr. Pratt suggests. It should be a very simple matter. We should be able to find out where this originated. If it originated with our committee, we have the power to kill it. But if our superiors ask us to put it in there, that would be the courteous way to do it.

MR. FULLER: It has been stated here this morning that there are a number of roads that do not stencil the weight on the end of their cars. This is a fact; it is really a fad, and is not given very much attention, except by a few railroads; it is an unnecessary expense; besides, the men going between the cars to stencil the end, which they have to do after the car leaves the scales, places them in a hazardous position, and that is the feature I wish to eliminate.

MR. THOMSON: Along the lines of unnecessary expense, I would again call attention to the lines above and below the letters, which I think are used at the request of the Association

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of Accounting Officers, through the American Railway Association. We are now putting those lines above and below at the request of our management. This is also along the line of extra stenciling, and should be included in this recommendation, if we want to take the stand that it is unnecessary.

MR. GOODNOW: I would like to ask Mr. Thomson if he refers to this new system of lettering whereby there will be no two initials alike, like "Atlantic Coast Line," and "Armour Car Line." The Accounting Officers' Association have sent out such a scheme of initials for cars; is that what you refer to, or do you refer to the old bar that used to be put under the initials?

MR. THOMSON: No, the wide bars are above and below the figures and letters which the accountants wish to stand out prominently. It is the new arrangement. We are using it, as are some of the other railroads.

MR. FULLER: I would rather see the motion go through without any mention of the bars, and if the gentleman who made that recommendation wants to cover that point, I would suggest he make a separate motion to that effect and keep this question of stenciling the weights on the ends of cars by itself.

THE PRESIDENT: As it stands now, Mr. Fuller, the motion is in that form.

MR. KLEINE: As I was a member of the Joint Committee between the Car Service Association and the Master Car Builders' Association my recollection is that the weight marking was placed on the end of the car at their request. I fully concur in Mr. Fuller's recommendation to leave it off, but I feel that we should first refer it to the American Railway Association with our recommendation to leave it off, and get their approval. As stated, it is a transportation matter.

MR. JOHN MCMULLEN (Erie R. R.): Mr. President, there is another matter I would like to direct attention to, and that is in the manner of switching cars. It will be found in many cases that the cars are weighed and weight will be changed on the side of the car and the end will not be changed. Therefore, I think that this should be directed to the attention of the American Railway Association.

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MR. TATUM: Mr. President, it has been stated that the recommendations of the American Railway Association were embodied in placing this weight on the end of the cars. With all due respect to the American Railway Association, and I know this Association wants to coöperate with it in every way, but our railroads have laid down the motto "Safety first," and we should remember that. This is a time when the M. C. B. Association should agree with the action of the railroads — make their motto "Safety first" and omit the weight on the end of the car on this account alone, if for no other. [Applause.]

THE PRESIDENT: You have heard the question, that it is the sense of this meeting that the weights should not be stenciled on the ends of the cars, and that that matter should be taken up in the proper way with the American Railway Association before final action is taken. All those in favor of that motion say "aye"; opposed, "no." Carried.

The report of the Committee on Standards is still before you. Are there any other items you would like to discuss?

MR. CHAMBERS: I would like to ask of Mr. Kleine, as he was a member of the Joint Committee, just what the reason for the bars was.

MR. KLEINE: The reason for the bars below the number and above the initial markings was to distinguish them from the other markings on the car; in other words, to assist the car number checkers in the yard to readily locate the initials and the number of the car; but you will note that the committee did not agree with that recommendation in toto. They made a change, and the modified marking was made a recommended practice.

MR. GOODNOW: Mr. President, very few roads are using the bar to which Mr. Thomson refers. It has never been included in the M. C. B. marking, either marking or lettering of cars, and it was not considered by the Committee on Standards in presenting this revised sheet. Neither did we take into consideration the new scheme of initialing of cars, which the Accounting Association is recommending, and which, I believe, has been approved by the American Railway Association, for the reason that so far as this sheet is concerned, it does not entail

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any change. It would simply be that whatever initials are assigned to a road they would be placed immediately above the car number, and there is really nothing to be covered in this sheet, so far as that is concerned.

MR. THOMSON: That is exactly what I wanted brought out, just what Mr. Goodnow has said. I wanted to know whether or not it had been considered in the action of the committee in preparing this report. Our people have considered it good enough to use, which I think is the case with some of the other roads. That is the reason I wanted to know personally just what the rest of the Association thought about it.

MR. CHAMBERS: I would like to call attention to one other subject, that their request also said that the name of the road in full should be put on in some manner in some place on the car. Now some of the roads, in order to comply with the request — take the Central of New Jersey, for example, the C. R. R. of N. J., with the bar above, as we are now requested to place it. We really have no other place where we can get a full-sized M. C. B. stencil of the railroad on the car. I would like some discussion along the line of whether it would be objectionable to put the name of the railroad, even with smaller letters, in any form you might choose, somewhere on the car, inasmuch as it will never be looked at. They would depend upon the registered initials entirely.

MR. GOODNOW: The committee kept in mind in this, the new style of box car, the single-sheathed car, with outside framing and which reduces the stenciling space on cars, and very greatly interferes with getting the stencils on same, so that the stenciling should be kept to the minimum, as far as possible.

THE PRESIDENT: Are there any further items in this report of the Committee on Standards, Mr. Sheafe?

MR. J. S. SHEAFE (Baltimore & Ohio R. R.): I would like to ask the committee why we should not have solid journal bearings stenciled "solid," and filled bearings stenciled "filled"? This would eliminate all dispute and all doubt. You can not tell a filled, or, in other words, a "shell" journal bearing from a solid one, when new.

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THE PRESIDENT: Mr. Goodnow, will you answer that inquiry?

MR. GOODNOW: The committee, in considering that question, thought, in the first place, that practically everybody was using the solid bearing, and the only way this could be determined was by the dimensions that are shown on the M. C. B. sheets for the bearings, and further, a great many roads are relining the bearings, and in doing so, are reboring them, and we did not know just where to draw the line, as eventually, under the relining of the bearing, it could become what is considered a filled bearing, under the present limiting dimensions.

MR. FULLER: I do not see how you are going to use the words "solid" and "filled" according to the arbitration report, for the reason that a bearing marked solid when bored down to a certain thickness, becomes a filled bearing. That was a cast shell. It has always been a question in my mind whether this Association wanted to recognize the use of a filled bearing, and believe it has been the intention for the Association bearing to be a solid bearing. I do not know just what the thought of the Arbitration Committee was, but they evidently took care of the fact that some roads were going to a thin limit by constantly reboring and relining, and they wanted to take care of that, which I think is an excellent thought on their part. I am in favor of stenciling the letter "F" on a filled brass, or, in other words, a brass shell that is filled with lead, to identify that bearing as a shell bearing.

MR. HENNESSEY: Mr. President, it seems to me it would be hardly practicable to mark journal bearings filled or solid. I think the large roads, as a general thing, are using in their new equipment, solid bearings, and at the same time they are all refilling these bearings, and in doing so they are reboring them. Now if they refill them once or twice, and bore out a fraction of an inch, they become filled bearings, under the rules. Are you going to force the railroads, when they have that bearing marked "solid," to scrap that good material? It seems to me it would be very extravagant. I admit it is very annoying to the repair man to designate between a filled and solid bearing, but the whole basis of these rules is common honesty, and if we get

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away from that and people call a filled bearing a solid bearing, what are you going to do about it? Your bill comes in and they say they put in a solid bearing, and I think they all believe they did, but if you got down to real fine points, and measured, you would find only one-thirty-second of an inch, and maybe one-sixteenth of an inch more filling than the rules allow. I believe you had better leave it as the committee recommended it.

MR. A. LAMAR (Penna. Lines): The Committee on Prices has taken care of the filled and solid journal bearing by recommending an average credit price of so much per pound, regardless of whether or not the bearing is filled or solid, and it therefore makes no difference whether or not the bearings are stamped "filled" or "solid."

MR. F. H. CLARK (Baltimore & Ohio R. R.): I move that the report of the committee as amended, be approved, and referred to the Association by letter ballot.

THE PRESIDENT: You have heard the motion, that the report of the Committee on Standards be accepted as amended, and referred to a letter ballot. All those in favor say "aye"; those opposed, "no." Carried.

Before taking up the next report, I will read the names of the Special Committee that have been appointed. For the Committee on Correspondence and Resolutions, I name Mr. J. H. Pilcher, of the Norfolk & Western Ry.; Mr. J. F. DeVoy, of the C. M. & St. P. Ry., and Mr. C. R. Ord, of the Canadian Pacific Ry.

For the Committee on Obituaries, the following will be named: For Mr. G. H. Eaton, of the Canadian Pacific Ry., Mr. R. W. Burnett will be the committeeman.

For Mr. D. E. Fitzgerald, of the St. L. & S. F. R. R., I name Mr. W. H. V. Rosing.

For Mr. William O'Herin, I name Mr. W. L. Kellogg, the M. K. & T. Ry.

For Mr. Jason Rigby, the Secretary, Mr. J. W. Taylor, will act.

For Mr. Charles Waughop, Mr. William Bawden, of the Terminal R. R. Assn of St. Louis, will be the committeeman.

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For O. F. Zeug, Mr. E. L. Phillips will be the committeeman.

For Mr. G. Larson, Mr. W. K. Thorn, of the C. St. P. M. & O. Ry., will serve as committeeman.

The next report is that on Train Brake and Signal Equipment. Mr. R. B. Kendig, I believe, is chairman of that committee, but he is absent. Will Mr. Flory present that report?

The report was presented by Mr. Flory, as follows:

REPORT OF STANDING COMMITTEE ON TRAIN BRAKE AND SIGNAL EQUIPMENT.

To the President and Members:

The following subjects have been considered by your committee, and they are presented for such action as the Association deems fitting:

No. 1.—Brake and Signal Pipe Clamps for Ends of Passenger Cars.

To insure passenger trains passing through short cross-overs and leads and around sharp curves without parting of air hose, your committee believes that all passenger equipment cars should be equipped with brake and signal pipe end clamp hangers of a swinging or sliding design so that sufficient lateral motion will be provided for the ends to prevent pulling apart of hose couplings.

To assist in the adoption of flexible end hangers, those now in use on passenger cars of the Pennsylvania Railroad, of the Pullman Company, and of the Baltimore & Ohio Railroad are herewith illustrated in Figs. 1, 2 and 3. The swinging pipe hanger in use on the New York Central Lines will be found illustrated at page 88 of Part 1, of the 1913 report of proceedings.

Your committee recommends that this subject be made one for investigation either by a special committee or by this committee, and that M. C. B., Sheet No. 18 be revised to show location of ends of pipe that have lateral movement.

No. 2.— Type of Conductor's Valve to Employ.

The conductor's valve being an important emergency device, due consideration was given as to the merits of various types of these valves with a view to selecting for adoption that which appeared to possess the greater merit, the type selected known as the B-3-A and shown in Fig. 4, your committee recommends.

From the drawing it will be seen that the B-3-A valve is of the check valve type, rubber seated and is not self-closing.

No. 3.— Cording Conductor's Valves and Number to Install.

Whenever permissible in passenger carrying cars, your committee recommends that conductor's valves be corded the entire length, so as

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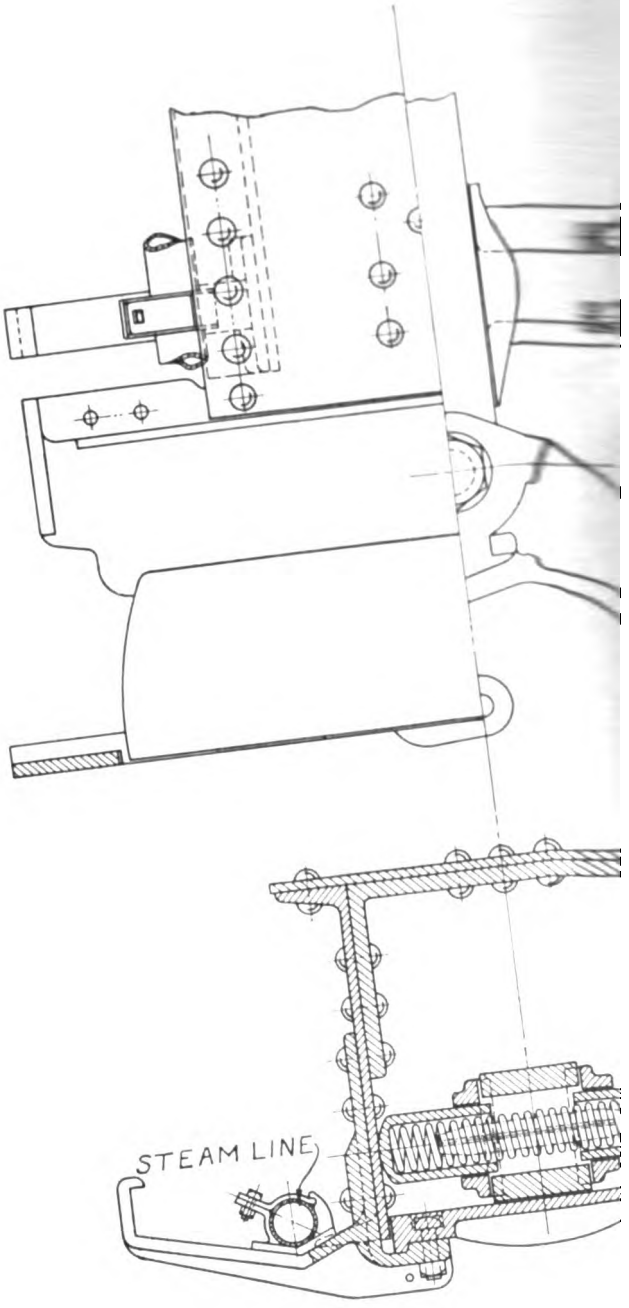

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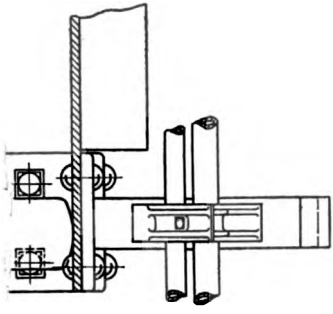


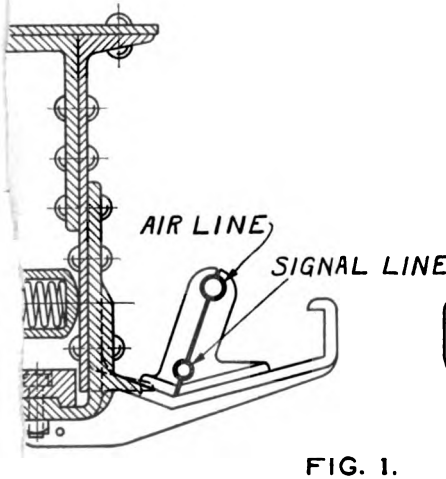
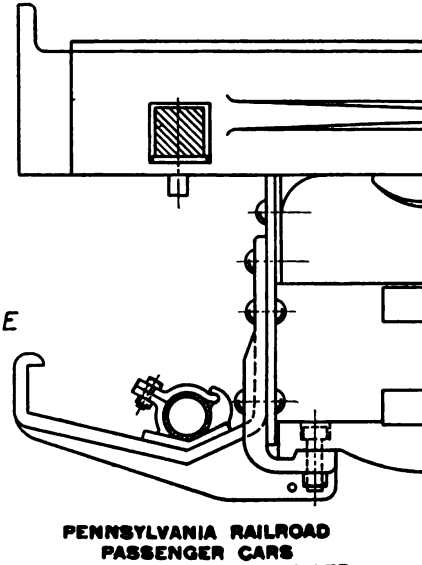


FIG. 1.



PENNSYLVANIA RAILROAD
PASSENGER CARS
ARRANGEMENT OF COUPLER
AND DRAFT GEAR

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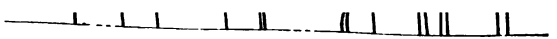

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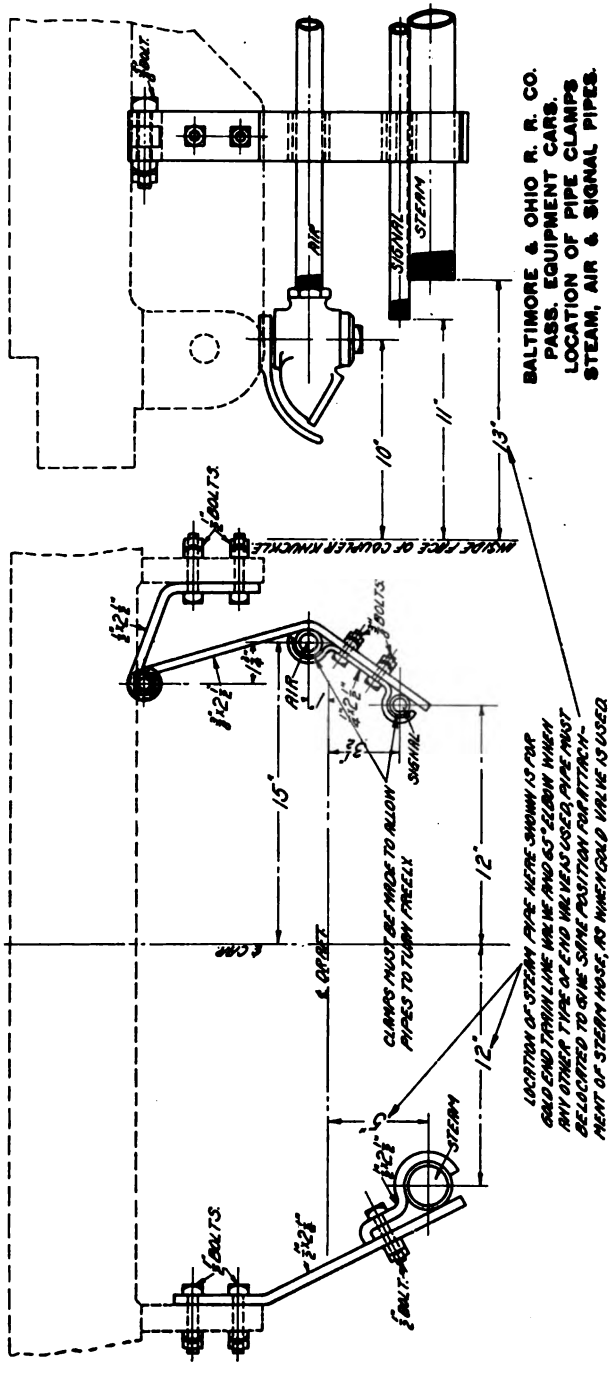
BALTIMORE & OHIO R. R. CO.
PASS. EQUIPMENT CARS.
LOCATION OF PIPE CLAMPS
STEAM, AIR & SIGNAL PIPES.
AIR
SIGNAL
STEAM
10"
11"
13"
4 BOLTS
INSIDE FACE OF COUPLER KNUCKLE
15"
12"
12"
CLAMPS MUST BE MADE TO ALLOW PIPES TO TURN FREELY
LOCATION OF STEAM PIPE AS HERE SHOWN IS FOR GOLD END TRAIN LINE VALVE AND 45° ELBOW WHEN ANY OTHER TYPE OF END VALVE IS USED, PIPE MUST BE LOCATED TO GIVE SAME POSITION FOR ATTACHMENT OF STEAM HOSE, AS WHEN GOLD VALVE IS USED

FIG. 3.

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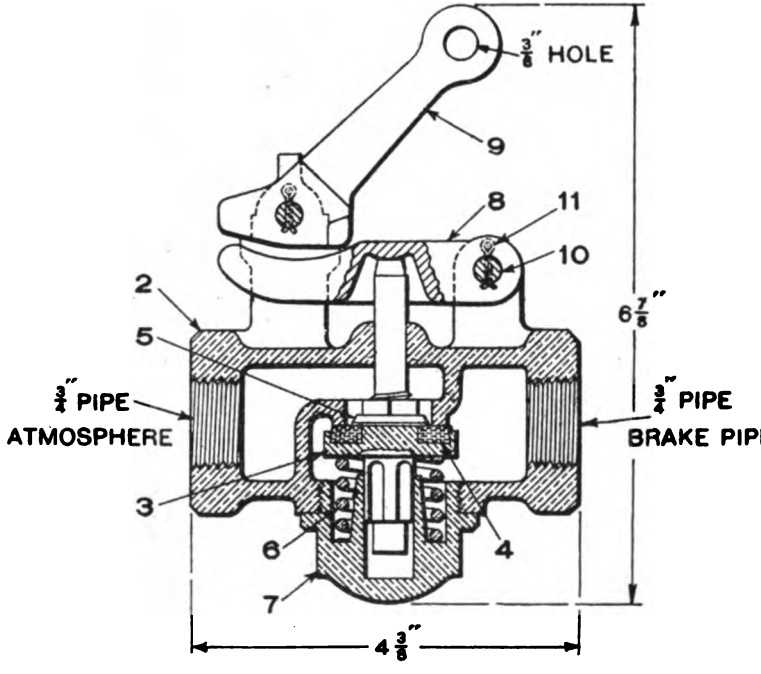

FIG. 4.

B-3-A. CONDUCTOR'S VALVE.

WESTINGHOUSE AIR BRAKE COMPANY.

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to be accessible from any point, including the platforms. Where this can not be done, as is generally the case in dining, buffet, and certain classes of load carrying cars, your committee recommends that two conductor's valves be installed, one at each end of the car, and that each be corded the distance necessary to permit of easy access.

No. 4.— Color and Material of Conductor's and Signal Valve Cords.

To prevent delay or confusion in getting hold of the right cord to operate conductor's and signal valves, your committee recommends that the conductor's valve cord be of red, and the signal-valve cord be of gray color; also, that the cords be made of metallic material; that is, either of wire or of chain, the committee's preference being chain for the conductor's valve, and hemp or cotton covered wire for the signal valve.

No. 5.— Clasp Brakes for Passenger Equipment Cars.

It is the desire of your committee to keep before the Association the clasp type of truck-brake rigging for passenger-equipment cars on account of the superior merits and higher degree of efficiency of this type, and because it is apparent that the single-shoe type of truck-brake gear does not come up to requirements on modern steel-car equipment.

The number of cars now in service equipped with clasp brakes is sufficiently large to make possible a satisfactory investigation of performance results, and your committee recommends that a special committee be appointed to make such investigation with a view to making a general determination of the relative merits of different designs of clasp brakes, and submit designs of foundation and clasp-brake gear for the consideration of the Association; also, make schedules of weights of cars which should be equipped with them.

No. 6.— Hand Brake Rigging for Passenger Cars.

A more satisfactory design of hand-brake rigging than that at present in general use is desirable for passenger-equipment cars, and therefore your committee recommends that this matter be made a subject for investigation by committee chosen to investigate the clasp brake.

No. 7.— New Train Signal System.

On account of the limited range of action of the present train air-signal, your committee desires to call attention to the need of an improved train signal — this with a view of accelerating the development of a signal device which shall be entirely satisfactory in its operation, such signal to permit of easy and prompt communication both between the train crew and engineman, and the engineman and train crew, under all conditions of service. If it is the desire of the Association that this subject be investigated, this committee will be pleased to do so and report progress at the next convention.

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No. 8.— Galvanized Brake Pipe and Fittings for Refrigerator and for Coal Cars.

The advantages derived from the use of galvanized pipe on coal and refrigerator cars are so large in the way of economy and maintenance and of satisfactory brake operation, that your committee respectfully begs to call once more the attention of the Association to the desirability of using this kind of pipe on cars of the classes named, and recommends that careful consideration be given this subject with a view to adopting galvanized pipe and fittings on cars where the piping is exposed to drippings of water and acids.

No. 9.— Revision of Air Brake and Train Air Signal Instructions.

That portion of the Master Car Builders' and American Railway Master Mechanics' Association Air Brake and Train Air Signal Instructions under the heading "General Instructions" has been revised by your committee, and the revision is incorporated in this report.

That portion comprising the "General Questions and Answers" has not been dealt with for the reason that the number of different types of brake equipments now in use is so large, and the fact that local conditions of different roads require special modifications in methods of handling brakes, it would be practically impossible to formulate a series of questions and answers that would be universally applicable. Moreover, the Air Brake Association has formulated a series of questions and answers that supplies all the air-brake information required in that form, and your committee respectfully refers you to them, while recommending, however, that a committee from this Association and from the Master Mechanics' Association be appointed to confer with the Air Brake Association committee having this matter in hand.

No. 10.— The following comprises the General Air Brake and Train Air Signal Instructions in revised form:

AIR BRAKE AND TRAIN SIGNAL INSTRUCTIONS.

"A"— GENERAL INSTRUCTIONS.

1. The following rules and instructions are issued for the government of all employees of this railroad whose duties bring them in contact with the maintenance and operation of the air brake and train air signal apparatus. They must be obeyed in all respects, as employees will be held strictly responsible for the observance of same.

Every employee whose duties are connected in any way with the maintenance and operation of the air brake will be examined from time to time as to his qualifications for such duties by the Inspector of Air Brakes or other person appointed by the proper authority, and a record will be kept of such examination.

Any employee whose work indicates an apparent lack of the requisite brake knowledge will be required to pass an examination at any time following such indications.

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"B"— INSTRUCTIONS TO ENGINEMEN.

2. Enginemen when taking charge of locomotives must see that the air brake and train air signal apparatus on engine and tender is in good working order and that the air compressor and lubricator work properly; that the devices used for regulating all pressures are adjusted at the authorized amount; that brake valves work properly in all positions of the handle; and that, when brakes are fully applied, with cam type of driver brake, the pistons do not travel less than 2 in., nor more than 3½ in., and with other forms of driver brakes from 4 to 6 in.; that the engine truck and trailer brake piston travel be not less than 4, nor more than 6 in.; that the tender brake piston does not travel less than 6 nor more than 8 in.

Enginemen must report to roundhouse foremen, in writing, at the end of the run, any defects in the air brake or train air signal apparatus.

3. MAKING UP TRAINS. TESTING BRAKES AT TERMINAL POINTS AND BEFORE STARTING DOWN SUCH GRADES AS MAY BE DESIGNATED BY SPECIAL INSTRUCTIONS.— The brake pipe on the engine and under the tender must always be blown out and maximum pressure obtained in main reservoir before coupling engine to train.

After the train has been coupled, stretched and fully charged, the engineman shall, at the request of the inspector or trainmen, apply the brakes with full service application and leave them so applied until all brakes operated from the engine have been inspected and the signal given to release. The engineman must then release the brakes and he must not leave the station until it has been ascertained that all brakes are released and he has been informed by the inspector, or the trainmen, the number of brakes in service and of their condition. If any defect is discovered during this test same must be corrected and the brakes again tested, and the operation repeated until the brakes are known to be in good condition.

In testing passenger train brakes, signal for releasing must be given from the air signal discharge valve on rear car.

Following the separation of couplings for local switching, or when engine is parted from train, or train has been parted for any purpose, the above test need not be complied with further than to ascertain, by test, that the rear brakes are responsive to brake valve on engine and that all brakes have properly released. However, when cars are added to train, the brakes on such cars must be inspected as in terminal test. When a back-up hose is to be used to control the train, the brakes must be applied for test with the back-up hose, and released from the brake valve on the engine.

4. SERVICE APPLICATION — PASSENGER TRAINS.— In making service stops from high speed, two applications should be used. The first application should be derived from two or more brake-pipe reductions, and when the speed has reduced to about fifteen miles per hour, release all brakes, and complete the stop with a moderate service application.

In making service stops with trains of less than seven cars, the brakes

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should be released about the time the drivers make the last revolution, except on heavy grades. Even on moderate grades and when stopping at water stations, coaling chutes, short platforms, etc., this should be done, and after releasing re-apply the brakes, either automatic or independent, as required, to prevent the train from starting. To avoid shocks and train parting the brakes must not be released on trains of seven or more cars while moving at a speed of less than ten miles per hour.

If *undesired quick action* has taken place during a service application on trains of more than five cars, the brakes must not be released until the train comes to a stop.

5. SERVICE APPLICATION — FREIGHT TRAINS.— In applying the brakes to steady the train on descending grades, or for reducing speed for any purpose, an initial brake-pipe reduction of not less than 7 lb. must be made. Releasing brakes at low speeds must not be attempted unless local conditions are favorable for same.

Ample time should always be allowed for making the stop, first permitting the slack of train to become adjusted before commencing to use the brake. After this the first brake-pipe reduction should be made and it should be sufficiently heavy to make the stop, being not less than 7 or more than 12 lb., according to the length of the train. Then when not more than a car length (40 ft.) short of the completion of the stop, a second reduction sufficiently heavy should be made to cause the brake valve to be blowing when stop is completed. After a reduction to apply brakes, no attempt must be made to release, until air ceases to discharge from the brake-valve pipe exhaust.

When backing freight trains and it is desired to stop, apply the brake in service, and when conditions permit, keep the engine brake from applying and the throttle open until stop is complete, the idea of keeping the engine brake released and using steam while train brake is applying being to keep the slack of train bunched and thus prevent train parting.

6. EMERGENCY APPLICATIONS.— The emergency application of the brakes must be used only in actual emergencies. Under such conditions the brake valve handle must be left in emergency position until train has come to a stop.

ENGINEMEN'S STRAIGHT AIR OR INDEPENDENT BRAKE VALVES.

(A) Always keep both brakes cut in and ready for operation, unless failure of some part requires cutting out.

(B) Always carry an excess pressure of 20 lb., or more, in the main reservoir, as this is necessary to insure a uniformly satisfactory operation.

(C) The straight air or the independent brake valve should not be used for bunching the slack of the train previous to an automatic application; neither should it be used alone for making ordinary stops with a train.

(D) The reducing valves for the straight air and the independent

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brake and the safety valves for the locomotive brakes should be kept adjusted at the authorized pressures.

When a full application of the straight air or of the independent brake causes any of the safety valves to operate, it indicates that same is out of order, or too high adjustment of the reducing valve or too low adjustment of the safety valve, or leakage of same. Have the reducing and safety valves tested and adjusted.

7. Brakes Applied From An Unknown Cause.— If it is found that the train is dragging as though the brakes were applied, without rapid falling of the pointer on the brake pipe air gage, the engineman must make an effort to release the brakes, which may be done as follows: First, if brake-pipe pressure is less than authorized amount and the required excess pressure is carried in the main reservoir, move the handle of the brake valve to release position for an instant and then return it to running position; second, should the brake pipe be fully charged, apply the brakes with a heavy service reduction, and release them in the usual way. In case the brakes can not be released in this manner, the train must be stopped and the trainmen notified.

If, however, the brakes go on suddenly with a rapid fall of brake-pipe pressure, it is evidence that (A) a conductor's valve has been opened, (B) a hose has burst or other serious leak has occurred, or (C) the train has parted. In such an event the engine throttle should be closed and the brake-valve handle immediately placed on lap or in emergency position, to prevent the escape of air from the main reservoir, and left there until the train has stopped and the signal to release has been given.

8. Braking By Hand.— Hand brakes must not be used, except in emergency.

9. Cutting Out Brakes.— *The engine and tender brakes must always be used automatically at every application of the train brake,* unless defective, except upon such grades as shall be designated by special instructions.

When necessary to cut out either the engine or the tender brake, it shall be done by closing the cut-out cock, located between the brake pipe and triple valve, and opening the drain cock in the auxiliary reservoir, on locomotives so equipped. On locomotives having the ET or the LT equipment close the cut-out cock in the pipe leading to the respective brake cylinder.

10. Double Headers.— When two or more engines are coupled in the same train, the brakes must be connected through to and operated from the leading engine. Engineman of each engine, except the leading one, must close the double-heading cock below the automatic brake valve and carry the handle of brake valve in running position. He will run the compressor for the purpose of maintaining pressure on his engine, and of enabling him to assume charge of the train brakes should occasion require.

11. Dead Engine Feature.— Its purpose is to supply air to the main

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reservoir for operating brakes and other devices on engines where pump has failed, or on dead engines en route. In both cases the cut-out cock in this device must be kept open and handle of both brake valves on such engines left in running position, and the double heading cock below automatic brake valve kept closed.

The dead engine cut-out cock must be kept closed on all engines whose compressors are running.

"C"— INSTRUCTIONS TO TRAINMEN.

12. MAKING UP TRAINS AND TESTING AIR BRAKES.— After the locomotive has been coupled to the train, or after two or more sections have been coupled together, the brake and signal couplings must be united, the cocks in the brake and signal pipes must all be open, except those at the rear end of the last car, which must be closed, and the rear hose hung up in the dummy couplings, when cars are so equipped.

After the train has been coupled, stretched, and fully charged, the engineman must be requested to apply the brakes. When he has done so, the brakes of each car must be examined to see if they are properly applied. When it has been ascertained that each brake has so applied, the engineman should be signalled to release.

In testing passenger-train brakes the train air signal whistle code for releasing must be used, and the signals to release must be given from the air signal apparatus on the rear car. The brakes of each car must then be examined to see that each is released, and the engineman informed as to the number of brakes in service and of their condition.

If any defect is discovered it must be remedied and the brakes tested again — the operation being repeated until it is ascertained that everything is right. The conductor and engineman must then be notified that the brakes are all right. Following the separation of couplings for local switching or when engine or train has been parted for any purpose, the above test need not be complied with other than to ascertain, by test, that the rear brakes are responsive to brake valve on engine, and that all brakes have properly released.

No passenger train must be started out from its terminal with the brakes upon any car cut out or in a defective condition. The air brakes must be relied upon to control all trains.

13. DETACHING LOCOMOTIVE OR CARS.— First close the cocks in the brake and signal pipes at the point of separation, and then part the couplings by hand.

COUPLINGS FROZEN.— If the couplings are found to be frozen together or covered with ice, the ice must first be removed and then the couplings thawed to prevent injury to the gaskets.

14. BRAKES STICKING.— If brakes are found sticking, and can not be released from the engine, or if the brakes are applied to detached cars, the release may be effected by opening the release valve in the auxiliary reser-

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voir until the air begins to release through the triple valve, when the valve must be closed.

15. Train Breaking In Two or More Parts.— First close the cock in the brake pipe at the rear of the first section, and then signal the engineman to release the brakes. Having coupled to the second section, observe the rules for making up trains — first being sure that the cock in the brake pipe at the rear of second section has been closed, if the train has broken in more than two sections. When the engineman has released the brakes on the second section, the same method must be employed with reference to the third section, and so on. When the train has been once more entirely united the brakes must be inspected on each car to see that all are released before proceeding.

16. Cutting Out the Brakes On a Car.— When necessary to cut out the brake upon any car, close the cut-out cock in the cross-over pipe near the triple valve, and open the drain cock in the auxiliary reservoir, leaving it open on passenger cars.

On freight cars the release valve must be held open until all of the air has escaped from the reservoir, when an air-brake defect card must be applied. The conductor must notify the engineman of brake cut-out.

17. Conductor's Valve.— Should it become necessary to apply the brakes from the train, it may be done by opening the conductor's valve in any car so equipped. *The valve must be held open until the train comes to a stop, and then must be closed.*

This method of stopping the train must not be used except in case of emergency.

18. Burst Hose.— In the event of the bursting of a brake hose, it must be replaced and the brakes tested before proceeding, so as to ascertain that the rear brakes are responsive to the brake valve on engine. At least one extra air-brake hose complete should be carried by all crews, and in addition one extra signal hose complete carried by passenger crews.

19. Brakes Not In Use.— When the air brakes are not in use, hose should be kept coupled between the cars or hung to the dummy couplings when cars are so equipped.

20. Pressure Retaining Valve.— When this valve is to be used, the trainmen must, at the top of the grade, at the point authorized, test the brakes upon the whole train, and must then pass over the train and turn the handles of the pressure retaining valves upon all or upon a part of the cars, as may be directed, to proper position for retaining pressure. At the foot of the grade, the handles must be turned downward (lengthwise with pipe) again. Special instructions will be issued as to the grades upon which these valves are to be used.

21. Train Air Signal.— In making up trains, all couplings and car discharge valves on the cars must be examined to see if they are tight. Should the car discharge valve upon any car be found defective, it may be cut out by closing the cock in the branch pipe leading to it. The con-

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ductor must be notified when the signal has been cut out upon any car, and he must report the same for repairs.

In using the signal, pull down upon the cord during one full second for each intended blast of the signal whistle, and allow three seconds to elapse between the pulls.

22. Reporting Defects to Inspectors.— Any defect in either the air brake or the train air signal apparatus must be reported to the inspector on arrival at terminal; or, if the defect be a serious one in passenger service, it must be reported to the nearest inspector, and such defect must be remedied before the car proceeds.

"D" INSTRUCTIONS TO ENGINE-HOUSE FOREMEN.

23. General.— It is the duty of the engine-house foreman to know that the air brake and train air signal equipment is properly inspected upon each locomotive after each run, and that necessary repairs are made before leaving the engine house. Air gauges must be tested at least once every thirty days, and date of testing shown.

24. Air Compressors.— The air compressors must be tested for efficiency by orifice test, and their condition determined.

Compressors must be started slowly with drain cocks open, these cocks to be left open until compressor is free from all condensation. They must also be left open while compressor is not working.

25. Compressor Governor.— The compressor governor should cut off the steam supply when the air pressure for which it is adjusted has been obtained, and promptly admit steam to the compressor when air pressure falls slightly below the authorized amount.

26. Brake Valves.— These valves must be kept clean and be known to be in working order in all positions of the handle before the engine leaves the engine house.

27.—Adjustment of Brakes.— Engine brake piston travel should not be less than 4 nor more than 6 in.; for tender brake not less than 6 nor more than 8 in. When cam driver brake is in use piston travel should be not less than 2 in. nor more than 3½ in., and care must be taken to adjust both cams alike, so that the point of contact of the cams will be in line with the piston rod; the brake shoes should be correctly adjusted at equal distances from the wheel at the top and bottom of the shoe and in line with the tires.

28. Brake Cylinders and Triple Valves.— Engine and tender brake cylinders, plain triple valves and high-speed reducing valves should be cleaned, lubricated and tested, at least once in six months; when locomotive is equipped with distributing valve or control valve, or the tender has a quick action triple valve, these parts should be cleaned and tested at least once in three months. Time and place of cleaning to be stenciled according to standard drawings.

29. Draining.— The main reservoir, and also the drain cup and dirt

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collector in the brake pipe under the tender, must be drained of any accumulation after each trip. The auxiliary reservoirs and triple valves must also be drained frequently, and daily in cold weather, and the brake pipe under the engine and tender blown out.

30. TRAIN AIR SIGNAL.— The train air signal apparatus must be examined and tested. both at front of engine and rear of tender, before every trip by means of a suitable appliance to which is attached an air gauge for testing the pressure carried. It must be known that the whistle responds properly also that the pressure-reducing valve maintains the authorized pressure.

"E"— INSTRUCTIONS TO INSPECTORS.

31. GENERAL.— It is the duty of all inspectors to see that the couplings, the pipe joints, the triple valves, the high-speed reducing valves, the conductor's valves, the air-signal valves, and all other parts of the brake and signal apparatus are in good order, of standard size for the car, and free from leaks. For this reason they must be tested under the full air pressure as used in service. No passenger train must be allowed to leave a terminal station with the brake upon any car cut out, or in a defective condition.

If a defect is discovered in the brake apparatus of a freight car, which can not be held long enough to give time to correct such defect, the brake must be cut out and the car properly carded, to call the attention of the next inspector to the repairs required.

Special rules will specify the smallest proportion of the total number of freight cars, with the air brakes in good condition, which may be used in operating the train as an air-brake train.

32. MAKING UP TRAINS AND TESTING BRAKES.— In making up trains, the couplings must be united and the cocks at the ends of the cars all opened, except at the rear end of the last car, where the cocks must be closed; the inspector must know that the air is passing through the pipes to the rear end, and the hose couplings at the rear are properly attached to the dummy couplings on cars so equipped.

After the train is stretched and fully charged, the engineman must be requested to apply the brakes. After the brakes are applied they must be examined upon each car to see that they have the proper piston travel. This having been ascertained, the inspector must signal the engineman to release the brakes.

In testing passenger-train brakes, the signal to release must be given from the discharge valve on the rear car. He must then again examine the brakes upon each car to note that all have released. If any defect is discovered, it must be corrected and the testing of the brakes repeated, until they are found to work properly. The inspector must then inform both the engineman and conductor of the number of cars with brakes in good order.

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The examination must be repeated if any change is made in the make-up of the train before starting.

33. CLEANING CYLINDERS, TRIPLE VALVES AND SLACK ADJUSTERS.— The brake cylinders and triple valves on freight equipment cars must be cleaned, lubricated and tested, at least once in twelve months, and the method of marking brake apparatus which has been cleaned, lubricated and tested, should be as shown in Rule No. 60, of M. C. B. Rules of Interchange.

On passenger cars, the cylinders, triple valves and slack adjusters must be cleaned and lubricated at least once in six months, and in case cars are equipped with high-speed brakes, the triple, high-speed valves and control valves must be cleaned at least once every three months, and date and place of last cleaning stenciled on these parts with white paint.

The triple valves and auxiliary reservoirs must be frequently drained, especially in cold weather, by removing the plug in the bottom of the triple valve and opening the drain cock in the bottom of reservoir.

34. ADJUSTMENT OF BRAKES.— The slack of the brake shoes must be taken up by means of the truck dead levers on cars having four-wheeled truck and at the turnbuckle nearest the center of the car on cars having six-wheeled trucks. In taking up such slack it must first be ascertained that the hand brakes are released, and the slack is all taken out of the upper connections, so that the truck levers do not go within one inch of the truck timber or other stop, when the piston of the brake cylinder is fully back at release position.

When under a full application the brake piston travel is found to exceed 9 in. upon passenger or freight cars, the brake shoe slack must be taken up and adjustment so made that the piston shall travel not less than 6 in. In taking up the brake shoe slack it must never be taken up by means of the hand brakes.

Where automatic slack adjusters are applied to a car, such adjuster must be fully released before the slack is taken up elsewhere, and where cars are equipped with P. C. control apparatus it must be seen that both slack adjusters are evenly adjusted.

35. BRAKING FORCE.— Where the cylinder lever has more than one hole at the outer end and different holes are for use upon cars of different weights, it must be carefully ascertained that the rods are connected to the proper holes, so that the correct braking force shall be exerted upon each car.

36. REPAIR PARTS.— Inspectors must keep constantly on hand for repairs supply of all parts of the brake and signal equipment that are likely to get out of order.

37. HANGING UP HOSE.— Inspectors must see that, when cars are being switched or while standing in the yard, the hose is coupled between the cars or properly secured in the dummy couplings, where cars are so equipped.

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38. RESPONSIBILITY OF INSPECTORS.— Inspectors will be held strictly responsible for the good condition of all the brake and signal apparatus upon cars placed in trains at their stations; they will also make examinations of the brakes, and such repairs as may be required.

R. B. KENDIG, Chairman,
B. P. FLORY,
R. K. READING,
R. B. RASBRIDGE,
L. P. STREETER,
A. J. COTA,
W. J. HARTMAN,
Committee.

THE PRESIDENT: Gentlemen, you have heard the report of the committee, and it is before you for discussion. This is quite an important report. I feel sure that there is something that is worth talking about in it.

MR. W. E. DUNHAM (C. & N. W. Ry.): Referring to Section No. 9 of the report, it seems to me that with the varying conditions from year to year, which do result as we know, in our brake practice, that any attempt to keep up these questions and answers every year is entirely impractical, and I would make a motion that the committee's recommendation be not accepted, and that in its place, the "Questions and Answers" be eliminated from our Standards.

Seconded.

THE PRESIDENT: You have heard this motion. Is there any discussion?

MR. B. P. FLORY (N. Y. O. & W. Ry.): Few members of the committee are here, but I do not think the committee would have any objection to leaving out the questions and answers. The committee talked it over once, and did not think they were of very much use to the Association, but they did not feel like making the recommendation themselves. As long as it has been made, the committee will be very glad to have that cut out.

THE PRESIDENT: In presenting this motion for vote, I would like to speak of a subject which has been brought very forcibly before the Executive Committee, and that is the importance of eliminating from the reports all matter which is not essential to a clear understanding. Our Proceedings have been steadily grow-

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ing from the size of a book like our Interchange Rules, when the Association started, to the two volumes necessary to make last year's Proceedings convenient to handle, and with the increase in size has gone an increase in expense, necessarily. In looking over some of the reports, the Executive Committee was impressed with the idea that some matter had been included which was not strictly essential to give a clear understanding of the report, as intended by the committee. You have heard the motion. All those in favor say "aye"; opposed, "no." Carried. Now that is a motion on the recommendation of the committee. The report as a whole is still before you for discussion.

MR. L. C. ORD (Canadian Pacific Ry.): I would like to ask a question concerning Paragraph No. 3, if it was the intention of the committee to recommend that the conductor's and signal valve cords should be extended to both platforms of cars, that is, to get two cords on each platform, particularly on vestibule cars.

MR. FLORY: Mr. Chairman, in answer to that question I can say this: It was the intention to extend the cord to the platform of the car, so that the conductor's valve would be accessible from any point in the car.

MR. ORD: In discussing that point, I think it is not well to put in a recommendation from the committee asking for something unless it is felt that it can be generally carried out. It is always difficult to know just what will come up from these reports. I do not believe the use of the two conductor's valve cords on the platform, particularly on vestibule cars, in addition to the signal cord, is wise, and I am certain it is of little use.

THE PRESIDENT: Is there any further discussion on this report?

MR. DUNHAM: I would recommend that paragraph 1, the suggestion of the committee regarding the adjustable pipe clamps, and paragraph 5, clasp brakes for passenger equipment cars, and paragraph 6 and paragraph 7, be referred back to this committee for further action and investigation, for next year's report.

THE PRESIDENT: What reason do you assign for those recommendations?

MR. DUNHAM: They have recommended some special com-

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mittee, and I recommend that this committee themselves take that action.

Motion seconded.

THE PRESIDENT: It has been moved and seconded that certain items be referred back to the Train Brake and Signal Equipment Committee for further investigation and report next year.

MR. GOODNOW: Mr. President, if that includes the question of the sliding hangers, especially the style as indicated in Fig. 2 for passenger equipment, I believe the committee should give the same very careful consideration. It has been my experience that the same were the cause of uncoupling of hose rather than a means of stopping same. I know where it was necessary to remove them to stop trouble from uncoupling as a result of their use. Ice, snow and so on forming in same holds the pipe away from the desired location with this result, and I am convinced that a fixed or positive location is better. If the length of the pipe or hose connections is not right and the cause of the uncoupling, correct this, and I believe better results will be obtained than to adopt any sliding hanger which will become clogged with ice, dirt, etc., and which will prevent the action intended.

MR. CHAMBERS: I am heartily in accord with that movement. We have trouble enough with leaky train pipe joints now, when held in one position. If we get them into a swinging motion we will have more trouble. In regard to the wire or chains for conductor's valve, I do not think a chain can be considered. It would be too heavy. I see no reason why the cords, with a wire insert, would not be perfectly satisfactory, and I think also it would be a mistake to extend the conductor's valve cord on to either platform of the car.

THE PRESIDENT: Mr. Dunham, I would like to ask you if Mr. Goodnow's suggestion comes in line with your motion?

MR. DUNHAM: Certainly, that comes in.

THE PRESIDENT: Will you repeat those numbers again?

MR. DUNHAM: Sections 1, 5, 6 and 7.

THE PRESIDENT: If there is no further discussion on Mr. Dunham's motion, which is to refer back Sections 1, 5, 6 and 7 with the request that the committee make further investigation

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and report next year, all those in favor of this motion say "aye"; those opposed, "no." It is carried.

The report, as a whole, is still open for discussion.

MR. ORD: Is it my understanding that that will include Section 3, include the conductor's valve also? That paragraph is not mentioned.

THE PRESIDENT: Mr. Ord, the motion has been acted upon, and unless you want to make a new motion, it is not consistent to take any further action on that, as I understand it. Do you wish to make that as a motion?

MR. ORD: I make it as a motion, that Section 3 be also included and referred back for further consideration, concerning the conductor's valve cord.

Motion seconded.

THE PRESIDENT: The motion is before you for discussion?

MR. PRATT: Mr. President, paragraph 3, the committee in reporting, makes a recommendation. It would seem to me it would hardly be consistent to refer that back to them, especially when several have expressed themselves on the floor as not being in accordance with the committee's recommendation. I think this is the place to thresh that out. As to paragraph 4, I was of the impression there, that the committee's preference was for a chain.

THE PRESIDENT: Paragraph 4 was not mentioned.

MR. PRATT: It seems to me this is the time to discuss paragraph 4, if it is of any importance to the members, and get a consensus of opinion. I rather agree with one speaker that the chain does not "listen" well. I think it would make more or less noise in pulling it, and there is an old saying that a chain is only as strong as its weakest link. Here is a chain of a thousand links through the train, and if one link should be defective, it would seem less safe than a cord, perhaps of metal.

THE PRESIDENT: Any further discussion on Mr. Ord's motion? If not, all those in favor of referring paragraph 3 back to the committee for further investigation and action say "aye"; opposed, "no." We will have to take a rising vote, I think. All those in favor of referring it back please rise. Those in favor of

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referring paragraph 3 back for further investigation and action please rise.

THE SECRETARY: Twenty-one.

THE PRESIDENT: Now, those opposed, please rise. (Large number rise.) The motion is lost. Do you wish to take any further action in regard to paragraph 3 at this time?

MR. CHAMBERS: I would now move that the wording "including platforms" relative to conductor's valve cord, be omitted from paragraph 3.

Motion seconded.

THE PRESIDENT: It is moved and seconded that in paragraph 3 the words "including platform, with reference to the conductor's valve cord," be omitted. The motion is before you for discussion. How will that leave the paragraph to read as you understand it?

MR. CHAMBERS: You will have to separate that. You know the signal line should run to the platform, but there is no reason that I can see why the conductor's valve cord should be on the platform, and somebody perhaps get hold of it and put the brakes on and perhaps tear out the drawbar. I do not see that there is any necessity for it at all.

MR. FULLER: To be frank with you, I do not like rule 3 at all. They have included in this "and certain classes of loaded cars." What is the meaning of load carrying cars? Express cars?

MR. FLORY: Baggage cars, express cars, etc.

MR. FULLER: I would suggest that this committee, if it is continued, consider the advisability of having retainers that can be operated either from the inside or outside of the car, especially on express cars and other cars that are sealed.

MR. PRATT: Why should they be inside at all?

MR. FULLER: Some cars are equipped with a retainer on the inside as well as a retainer on the outside, and the idea of eliminating this objectionable feature prompted my suggestion to use a combination retainer that can be worked from the inside or the outside of the car. If it is desired to have a retainer so it can be

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operated from the inside of the car, a combination retainer should be used.

MR. PRATT: I think our recommended practice retainer is not inside the car.

MR. FULLER: Yes, but they are in.

MR. PRATT: I do not believe that two rules which are wrong should be made to make a thing right.

MR. FULLER: As long as we use the two we should use the combination in place of the two.

MR. D. R. MACBAIN (L. S. & M. S. Ry.): I think it would be perfectly proper to reject cars in interchange that have the two retainers on them, one on the inside and one on the outside, because manifestly if you can only get to the one on the outside, the retainer on the car won't do you any good, because the one on the inside will release the brake. I think it is a wrong construction, anyway.

MR. FULLER: I do not see how we can tell. We get your cars and they are sealed, and they are not opened until they get to the Coast.

MR. MACBAIN: We do not have them on.

MR. FULLER: I know, but we are handling the cars.

MR. MACBAIN: While I am on my feet, Mr. Chairman, I will say I think there is good ground for an objection to that portion of paragraph 3 where it recommends the signal cord and the conductor's cord being extended across the platform. I think it would be a great mistake to do that, because we know that the signal cord is used a thousand times where the conductor's valve is used only once. To a brakeman and a conductor it gives a signal; everybody does not know that, and he does not know just which one has been used a thousand times, or the one that has been used once, and he will pull the automatic very many times by mistake. I believe that should not be part of the recommendation.

THE PRESIDENT: The question is on Mr. Chambers' motion. I will ask Mr. Chambers if he will kindly state that again, so that we can get clearly his views.

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MR. CHAMBERS: I move that the words "including platforms," etc., in paragraph 3, in reference to the conductor's valve signal cord, be omitted.

THE PRESIDENT: That is in next to the last line. You have heard the motion. All those in favor say "aye"; opposed "no." Carried. The committee, in paragraph 4, makes a recommendation. Do you wish to consider that separately?

MR. FLORY: Mr. President, Mr. Chambers spoke about the use of the chain for the conductor's valve. The Pennsylvania R. R. is using chain for that purpose. Perhaps they could give some idea of its service. The committee, however, does not make the specific recommendation that chain must be used, but that either a chain or a cotton-covered wire can be used.

THE PRESIDENT: Mr. Kleine, can you give us any information on that point?

MR. KLEINE: The Pennsylvania Railroad uses the chain for the conductor's valve and the cord for the signal valve, in order to decidedly differentiate between the two cords, and we have had no trouble whatever with the chain that we are using. It never had an undesirable effect on the operation of the conductor's valve, due to the weight of the chain, and it is on all our later steel cars. We run the cord the full length of the car, but we do not run the conductor's cord out on the platform.

MR. THOMSON: May I ask Mr. Kleine if it is not necessary to support the chain about every second window; also whether the chain can be used in cars that have the cord going through the middle of the car above the whistle cord? We had the thing up some time ago, in regard to purchasing chain, finding it was cheaper than wire center cord which we use, and we found that it would have to be supported at much closer intervals than the regular hangers in the car, in order to keep it away from the other cord. I would like to have a little light on that point.

MR. KLEINE: Mr. Thomson is entirely correct in his statement; you must support it at certain intervals to prevent too much sagging. That is also true of the ordinary cord, when hung under the deck rail, in order to prevent too much sagging over the basket rack.

MR. C. D. YOUNG (Penn. R. R.): I move that the report of

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the committee as amended in paragraphs 2, 3, 4, 9 and 10, be submitted to the Association by letter ballot.

THE PRESIDENT: You have omitted paragraph 8.

MR. YOUNG: In paragraph 8, the committee has not seen fit to recommend the use of galvanized pipe and galvanized fittings, but calls the attention of the Association to the desirability of this. It seems to me this is a subject for the committee to continue investigation upon.

THE PRESIDENT: Is Mr. Young's motion seconded?

MR. FULLER: I second the motion.

MR. DUNHAM: I would like to call attention to the fact that No. 9 has been stricken out.

MR. YOUNG: My motion carried with it the words "as amended."

THE PRESIDENT: That was understood, Mr. Young. Is there any discussion on Mr. Young's motion? If not, all those in favor of this motion to submit the report as amended to letter ballot say "aye"; those opposed, "no." Carried.

The next report is that on Brake Shoe and Brake Beam Equipment. I believe that Mr. DeVoy is to present that.

MR. J. F. DEVOY (C. M. & St. P. Ry.): Mr. Chairman, on account of some other duties which Dr. Benjamin had to perform, he asked that I read this report.

The report was read by Mr. DeVoy, as follows:

REPORT OF COMMITTEE ON BRAKE-SHOE AND BRAKE-BEAM EQUIPMENT.

To the Members:

This committee has held three meetings during the year on the dates of October 22, January 21 and March 18, at the office of the Secretary of the Association in Chicago. This committee has considered two sets of problems, those relating to the behavior of brake shoes and those affecting the design of brake beams.

PART I.

BRAKE SHOES.

According to instructions, the committee has completed the tests on brake shoes, supplementing the work of previous years and closing up the gap which has heretofore existed between the earlier tests and those made at high pressures and speeds. As far as possible, the tests this year employed the same shoes as used in the last series of tests, or duplicates.

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It is believed that this finishes the tests necessary for a complete understanding of the effect of various pressures and speeds on the coefficient of friction and wear of various types of brake shoes.

The following is the report of Professor L. E. Endsley, who personally conducted the tests upon the shoes:

Dean C. H. Benjamin, Purdue University:

DEAR SIR,— I submit herewith a report of tests of brake shoes made for the Brake Shoe Committee of the Master Car Builders' Association.

The tests were conducted upon the Master Car Builders' brake-shoe testing machine, a description of which will be found in the Proceedings of the Association for 1894 and 1906.

The shoes tested were of six different kinds and were selected from the seven different kinds of shoes reported on in 1911. Two of each of the six different kinds were tested. The seventh kind were all broken in the tests carried on in 1911, thus making the report this year cover the test of twelve shoes, two each of six different kinds. Three of the shoes tested this year, namely, Nos. 358, 376 and 377, were the same shoes as tested in 1911. The remaining shoes were two of the six original shoes submitted of each kind. The numbers of the shoes tested this year are as follows: 341, 342, 347, 348, 353, 354, 358, 359, 369, 370, 374 and 375.

Shoe No. 341 was designated by the committee as a "plain cast-iron shoe." It was received from the Pennsylvania Railroad Company. The marking on the back is as follows: "O P V 5470." The dimensions of the shoe when it was received at the laboratory were: Length on arc, 14 in.; width, 3⅜ in.; thickness, 1½. This shoe has no insert. It is reinforced with steel back. A photograph of the shoe after test is shown as Fig. 1.

Shoe No. 342 is similar to Shoe No. 341 and bears the same marking. A photograph of the shoe after test is shown as Fig. 2.

Shoe No. 347 was designated by the committee as a "Spear-Miller shoe" and was received from the C. B. & Q. Railroad. There were no markings on this shoe. The dimensions of the shoe when it was received at the laboratory were: Length on arc, 13½ in.; width, 3⅜ in.; thickness, 1¾ in. The shoe has two V-shaped inserts. It is reinforced with a steel back. A photograph of the shoe after test is shown as Fig. 3.

Shoe No. 348 is similar to Shoe No. 347 and bears the same marking. A photograph of the shoe after test is shown as Fig. 4.

Shoe No. 353 was designated by the committee as a "National type." It was received from the Chicago, Milwaukee & St. Paul Railroad Company. The marking on the back is as follows: "P. P. M. C. B. 33." The dimensions of the shoe when it was received at the laboratory were: Length on arc, 14 in.; width, 3⅜ in.; thickness, 1⅝ in. This shoe has chilled ends and is reinforced with a steel back. A photograph of the shoe after test is shown as Fig. 5.

Shoe No. 354 is similar to Shoe No. 353 and has the same marking. A photograph of the shoe after test is shown as Fig. 6.

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Shoe No. 358 was designated by the committee as a "Diamond 'S' Christie type." It is also known as a half-flange type, having a flange of 2½ in. at each end of the shoe. It was received from the Southern Pacific Railroad. The marking on the back of the shoe is "'S' A Pat. 4 11 93 G 1938." The dimensions of the shoe when it was received at the laboratory were: Length on arc, 14 in.; width, 4 in.; thickness, 1½ in. The insert of this shoe is composed of a bundle of expanded metal, covering the entire face of the shoe. The shoe is reinforced with a steel back. A photograph of the shoe after test is shown as Fig. 7.

Shoe No. 359 is similar to Shoe No. 358 and bears the same marking. A photograph of this shoe after test is shown as Fig. 8.

Shoe No. 369 was designated by the committee as a "U" shoe. It was received from the New York Central Lines. The marking on the back of the shoe is as follows: "U A Pass, N. Y. C. Lines." The dimensions of the shoe when it was received at the laboratory were: Length on arc, 15¾ in.; width, 3⅜ in., and thickness, 1⅝ in. The ends of the shoe are tapered and chilled. The shoe is reinforced with a steel back. A photograph of the shoe is shown as Fig. 9.

Shoe No. 370 is similar to Shoe No. 369 and bears the same marking. A photograph of this shoe after test is shown as Fig. 10.

Shoe No. 374 was designated by the committee as a "Pittsburgh Shoe." It was received from the Pennsylvania Railroad Company. There was no marking on the back of this shoe. The dimensions of the shoe when it was received at the laboratory were: Length on arc, 14 in.; width, 3⅜ in.; thickness, 1⅜ in. This shoe is made up of a pressed back, ⅛ in. thick, completely filled with a composition filler. A photograph of the shoe taken after test is shown as Fig. 11.

Shoe No. 375 is the same as Shoe No. 374. A photograph of the shoe after test is shown as Fig. 12.

Schedule of Test.— Each shoe was tested upon a steel-tired wheel under the following brake-shoe pressures: 12,000, 14,000, 16,000 and 18,000 lb., the initial speed of the machine being in each case 65 miles per hour. At each of the above pressures nine stops were made.

Method of Testing.— In anticipation of a test, the shoe was given a number of applications until a full bearing surface was obtained, after which it was accurately weighed upon a pair of scales. The shoes were first tested at a pressure of 12,000 lb., after which the pressure was increased by increments of 2000 lb. until a pressure of 18,000 lb. was reached, or until the shoe broke or became unserviceable.

The loss in weight of the shoe was obtained by weighing the shoe after each three applications, thus giving a check upon the loss for each pressure.

Between each application the shoe was cooled by a blast of air until the temperature was reduced to such an extent that the observer could bear his hand upon the shoe.

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RESULTS OBTAINED.— The results obtained are given in Tables I to VI, inclusive.

Table I gives the results obtained at a brake-shoe pressure of 12,000 lb. Col. I of this table gives the number of the brake shoe; Col. II, the designation of the shoe; Col. III, the road on which it is standard; Col. IV, the coefficient of friction of shoe; Col. V, the average coefficient of friction of the two shoes of the same kind; Col. VI, the loss for each 100,000,000 foot-pounds of work done for each shoe; Col. VII, the average loss per 100,000,000 foot-pounds of work done for the two shoes of each kind.

Table II gives results obtained at 14,000 lb. pressure.

Table III gives results obtained at 16,000 lb. pressure.

Table IV gives results obtained at 18,000 lb. pressure.

In Tables II to IV the notation for the columns are the same as for Table I.

Table VI gives the approximate distance per stop in feet as obtained from the three cards taken at each pressure for the two shoes of each kind. Col. I of this table gives the number of the brake shoe; Col. II, the designation of the shoe; Col. III, the road on which it is standard; Col. IV, the approximate distance in feet during the stop at a pressure of 12,000 lb.; Col. V, the approximate distance in feet during the stop at a pressure of 14,000 lb.; Col. VI, the approximate distance in feet during the stop at a pressure of 16,000 lb.; Col. VII, the approximate distance in feet during the stop at a pressure of 18,000 lb.

Fig. 13 gives the average coefficient of friction of each kind of shoe tested, plotted against the brake-shoe pressure.

Fig. 14 gives the average loss per 100,000,000 foot-pounds of work done for each kind of shoe, plotted against the brake-shoe pressure.

Fig. 15 gives the approximate distance per stop in feet for each kind of shoe, plotted against the brake-shoe pressure.

NOTES CONCERNING TESTS.

It will be seen from Fig. 13 that the coefficient of friction of most of the shoes decreased as the pressure increased, the two exceptions to this being the plain cast iron and the National. The plain cast-iron shoe gave almost the same coefficient at all pressures, while the National gave almost the same coefficient at the three lower pressures and then made a sudden drop at 18,000 lb. pressure.

The loss in weight, due to wear, as plotted in Fig. 14, shows that in the case of four of the different types of shoe tested, the loss increased as the pressure increased up to 16,000 lb. With two of the kinds of shoes tested, the loss reduced at 18,000 lb. pressure. This seemingly inconsistent result may be accounted for by the fact that two of the shoes, namely, the National and the Spear-Miller, broke during the tests at 16,000 lb., thereby increasing the wear for a time at least, and possibly

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decreasing the wear when the broken shoes had again been worn to a new fit before the 18,000 lb. pressure.

Two of the types of shoes tested, namely, the Diamond S and the Pittsburg, showed a tendency to reduce the wear as the pressure was increased up to 16,000 lb., but increased at 18,000 lb. pressure. No doubt this reduction in loss was due to a change in the per cent of insert in contact or a change in the physical makeup of the shoe.

It will be seen from a study of Fig. 13 that the coefficients of friction of five of the different types of shoes tested fall somewhat close together, but not nearly so close as they did in the tests conducted at 80 miles per hour and reported in 1911. In 1911 the variation was less than 2 in the value of the coefficient of friction in per cent at any pressure for all shoes tested, with the exception of the Pittsburg shoe. From the results reported this year at 65 miles per hour, it will be seen that this variation is considerably more, being as much as three or over at the different pressures. The coefficient of friction in 1911 was never over 10 per cent nor under 7 per cent, an average for all shoes with the exception of the Pittsburg, being approximately 8.4, while in the tests this year at 65 miles per hour, the maximum was 13.3 and the minimum 10 per cent for all but the Pittsburg shoe. The average coefficient of friction at 65 miles per hour was 12.2, thus making it greater by 3.8 than it was at 80 miles an hour.

The Pittsburg shoe in the tests of 1911 at 80 miles an hour varied in a straight line from 19.75 per cent at 12,000 lb. pressure to 17.1 per cent at 18,000 lb. pressure. It will be seen from the tests made this year that the coefficient of friction of this shoe was less at 65 miles an hour than at 80 miles an hour. It will also be noted that the loss of weight in the Pittsburg shoe was more at 65 miles an hour than at 80 miles an hour. In 1911 the average loss at 80 miles an hour was 2.8, while this year the results at 65 miles an hour showed a loss of 3.2. This apparent inconsistency in the coefficient of friction and loss in wear of the Pittsburg shoe may be accounted for by the fact that the shoe is made of a composition filler, and as the shoes have been lying in the laboratory for three years where the temperature was 70 deg. or more, the binder which holds the filler together may have dried out, thus reducing the coefficient of friction and increasing the wear.

The results given in Fig. 15 show that the approximate distance per stop was inversely proportional to the coefficient of friction, all of the metallic shoes varying about the same as for coefficient of friction, and this variation is greater at 65 miles per hour than at 80 miles per hour, as reported in 1911. The Pittsburg shoe made stops at approximately half of the distance required by the poorest metallic shoe.

Respectfully submitted, LOUIS E. ENDSLEY,
Professor of Railway Mechanical Engineering.

The committee would suggest the desirability of having a complete review and digest of tests so far made, with suitable conclusions, to be made a part of the next year's Proceedings. There has not been time to prepare such a digest this year.

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FIG. 1.— Shoe 341. Plain cast iron.

FIG. 2.— Shoe 342. Plain cast iron.

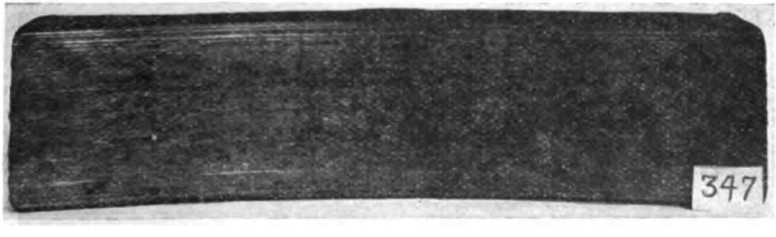

FIG. 3.— Shoe 347. Spear-Miller.

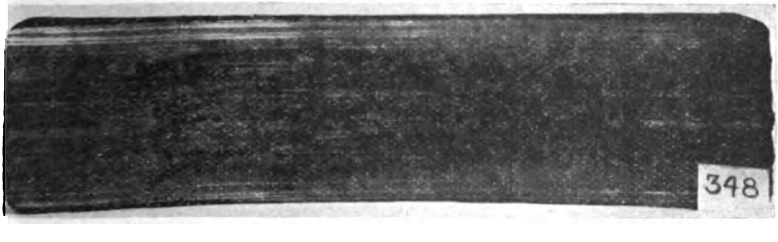

FIG. 4.— Shoe 348. Spear-Miller.

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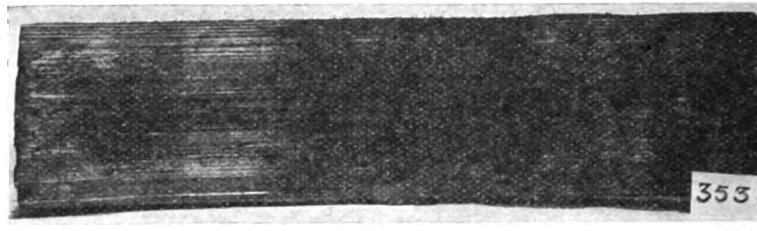

FIG. 5.— Shoe 353. National.

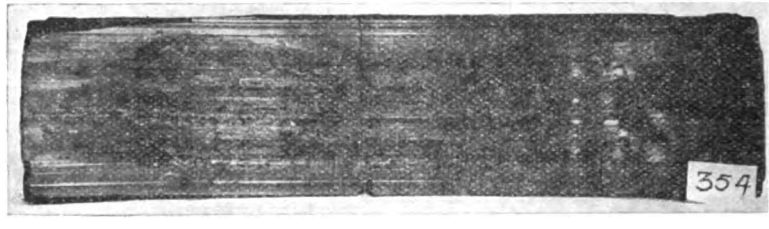

FIG. 6.— Shoe 354. National.

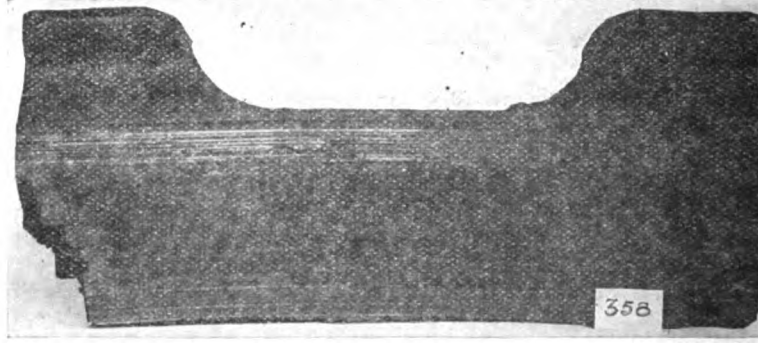

FIG. 7.— Shoe 358. Diamond S.

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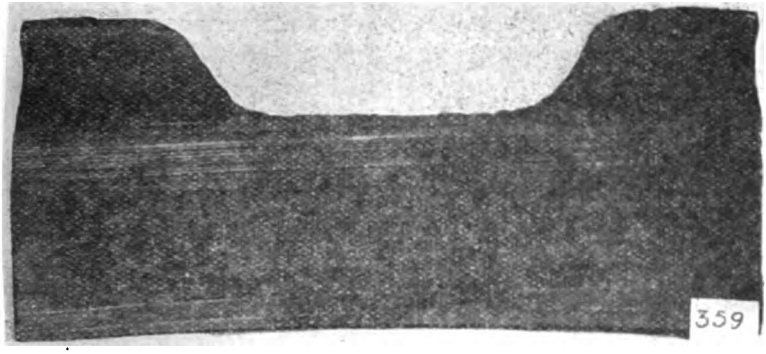

FIG. 8.— Shoe 359. Diamond S.

FIG. 9.— Shoe 369. U shoe.

FIG. 10.— Shoe 370. U-shoe.

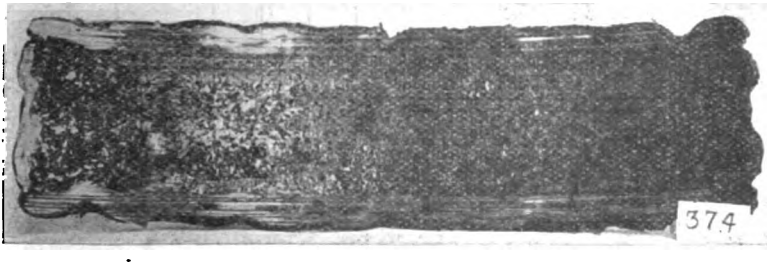

FIG. 11.— Shoe 374. Pittsburg.

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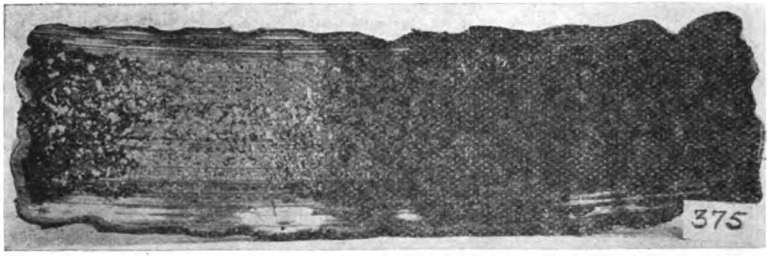

FIG. 12.— Shoe 375. Pittsburg.

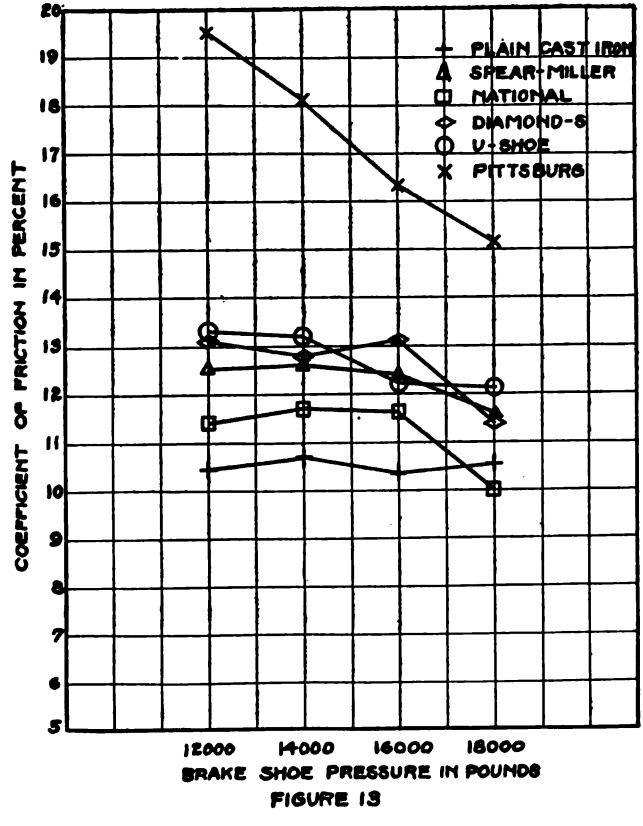

FIGURE 13

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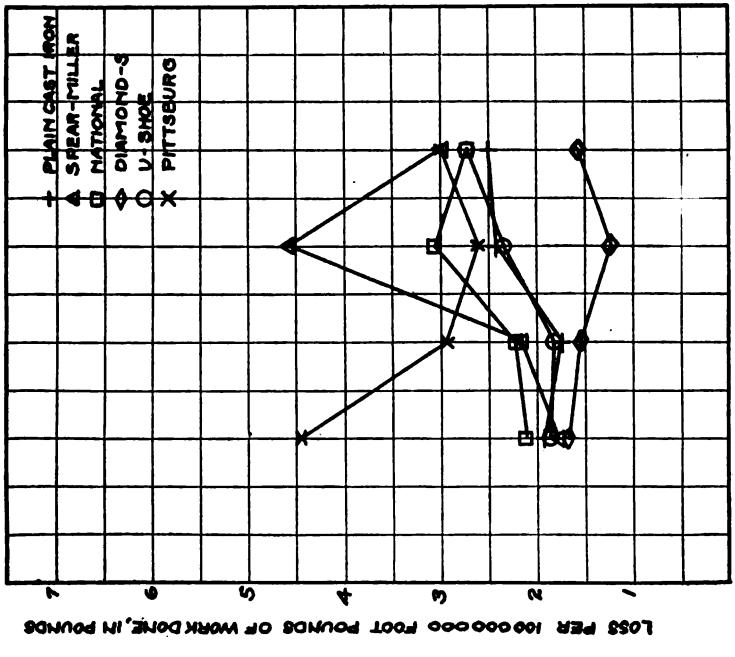

FIGURE 14

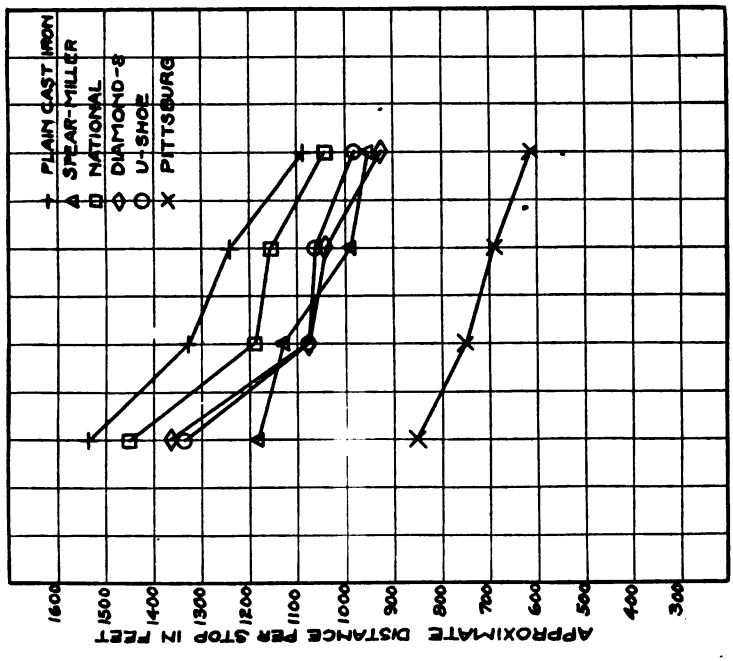

FIGURE 15

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TABLE I.

INITIAL SPEED 65 MILES PER HOUR — BRAKE SHOE PRESSURE 12000 POUNDS.

NO OF SHOE	DESIGNATION OF SHOE	STANDARD OF	COEFFICIENT OF FRICTION		LOSS PER 100000000 FT. POUNDS OF WORK DONE IN POUNDS	
			EACH SHOE	AVERAGE FOR EACH KIND	EACH SHOE	AVERAGE FOR EACH KIND
I	II	III	IV	V	VI.	VII.
341	PLAIN CAST IRON	PENN.	10.03	10.47	1.49	1.90
342	PLAIN CAST IRON	PENN.	10.91		2.31	
347	SPEAR-MILLER	C.B & Q	12.77	12.58	1.56	1.76
348	SPEAR-MILLER	C.B & Q	12.38		1.95	
353	NATIONAL	C.M.&StP	12.19	11.41	2.98	2.12
354	NATIONAL	C.M.&StP.	10.62		1.25	
358	DIAMOND-S	SOU. PACIFIC	13.54	13.15	1.98	1.66
359	DIAMOND-S	SOU. PACIFIC	12.75		1.33	
369	U-SHOE	N.Y.C. LINES	13.34	13.31	1.58	1.87
370	U-SHOE	N.Y.C. LINES	13.27		2.15	
374	PITTSBURG		19.05	19.51	4.71	4.47 *
375	PITTSBURG		19.96		4.22	

* ACTUAL LOSS IN WEIGHT HAS BEEN MULTIPLIED BY 2.20 WHICH IS THE RATIO OF CAST IRON TO THE ABRADED PARTS OF THIS SHOE

A.E.H.

TABLE II

INITIAL SPEED 65 MILES PER HOUR — BRAKE SHOE PRESSURE 14000 POUNDS

NO OF SHOE	DESIGNATION OF SHOE	STANDARD OF	COEFFICIENT OF FRICTION		LOSS PER 100000000 FT. POUNDS OF WORK DONE IN POUNDS	
			EACH SHOE	AVERAGE FOR EACH KIND	EACH SHOE	AVERAGE FOR EACH KIND
I	II	III	IV	V	VI	VII
341	PLAIN CAST IRON	PENN	10.19	10.71	1.43	1.75
342	PLAIN CAST IRON	PENN	11.23		2.06	
347	SPEAR-MILLER	C.B. & Q.	13.02	12.70	2.12	2.18
348	SPEAR-MILLER	C.B. & Q.	12.37		2.24	
353	NATIONAL	C.M.&StP.	12.81	11.69	3.08	2.23
354	NATIONAL	C.M.&StP	10.57		1.37	
358	DIAMOND-S	SOU. PACIFIC	13.31	12.79	1.47	1.54
359	DIAMOND-S	SOU. PACIFIC	12.26		1.61	
369	U-SHOE	N.Y.C. LINES	12.98	13.22	1.73	1.83
370	U-SHOE	N.Y.C. LINES	13.46		1.92	
374	PITTSBURG		17.80	18.14	2.95	2.94 *
375	PITTSBURG		18.48		2.93	

* ACTUAL LOSS IN WEIGHT HAS BEEN MULTIPLIED BY 2.20 WHICH IS THE RATIO OF CAST IRON TO THE ABRADED PARTS OF THIS SHOE.

A.E.H.

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TABLE III

INITIAL SPEED 65 MILES PER HOUR — BRAKE SHOE PRESSURE 16000 POUNDS

NO. OF SHOE	DESIGNATION OF SHOE	STANDARD OF	COEFFICIENT OF FRICTION		LOSS PER 100000000 FT. POUNDS OF WORK DONE IN POUNDS	
			EACH SHOE	AVERAGE FOR EACH KIND	EACH SHOE	AVERAGE FOR EACH KIND
I	II	III	IV	V	VI	VII
341	PLAIN CAST IRON	PENN	10.48	10.37	2.08	2.43
342	PLAIN CAST IRON	PENN	10.26		2.77	
347	SPEAR-MILLER	C.B.&Q.	12.15	12.43	4.72	4.60
348	SPEAR-MILLER	C.B.&Q	12.71		4.48	
353	NATIONAL	C.M.&St.P.	11.69	11.62	3.92	3.06
354	NATIONAL	C.M.&St.P	11.55		2.19	
358	DIAMOND-S	SOU. PACIFIC	13.90	13.09	1.03	1.21
359	DIAMOND-S	SOU. PACIFIC	12.27		1.38	
369	U-SHOE	N.Y.C. LINES	12.52	12.23	2.20	2.35
370	U-SHOE	N.Y.C. LINES	11.93		2.50	
374	PITTSBURG		16.20	16.33	2.73	2.63 *
375	PITTSBURG		16.46		2.53	

* ACTUAL LOSS IN WEIGHT HAS BEEN MULTIPLIED BY 2.20 WHICH IS THE RATIO OF CAST IRON TO THE ABRADED PARTS OF THIS SHOE

Lll.

TABLE IV

INITIAL SPEED 65 MILES PER HOUR — BRAKE SHOE PRESSURE 16000 POUNDS

NO OF SHOE	DESIGNATION OF SHOE	STANDARD OF	COEFFICIENT OF FRICTION		LOSS PER 100000000 FT. POUNDS OF WORK DONE IN POUNDS	
			EACH SHOE	FOR EACH KIND	EACH SHOE	FOR EACH KIND
I	II	III	IV	V	VI	VII.
341	PLAIN CAST IRON	PENN	10.30	10.56	2.27	2.51
342	PLAIN CAST IRON	PENN	10.82		2.75	
347	SPEAR-MILLER	C.B.&Q	11.68	11.53	2.56	2.95
348	SPEAR-MILLER	C.B.&Q	11.38		3.34	
353	NATIONAL	C.M.&St.P	9.74	10.00	4.00	2.71
354	NATIONAL	C.M.&St.P.	10.26		1.41	
358	DIAMOND-S	SOU. PACIFIC	12.13	11.33	1.32	1.57
359	DIAMOND-S	SOU. PACIFIC	10.52		1.82	
369	U-SHOE	N.Y.C. LINES	12.03	12.13	3.07	2.69
370	U-SHOE	N.Y.C. LINES	12.23		2.31	
374	PITTSBURG		15.07	15.11	3.04	2.99 *
375	PITTSBURG		15.15		2.93	

* ACTUAL LOSS IN WEIGHT HAS BEEN MULTIPLIED BY 2.20 WHICH IS THE RATIO OF CAST IRON TO THE ABRADED PARTS OF THIS SHOE

Lll.

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TABLE V

INITIAL SPEED 65 MILES PER HOUR

NO OF SHOE	DESIGNATION OF SHOE	STANDARD OF	APPROXIMATE DISTANCE PER STOP IN FEET UNDER THE FOLLOWING BRAKE SHOE PRESSURES.				
			12000	14000	16000	18000	
I	II	III	IV	V	VI	VII	VIII
341 342	PLAIN CAST IRON	PENN	1540	1327	1240	1092	
347 348	SPEAR-MILLER	C.B.& Q	1189	1133	994	951	
353 354	NATIONAL	C.M.& St.P.	1460	1190	1157	1042	
358 359	DIAMOND-S	SOU.PACIFIC	1370	1080	1024	946	
369 370	U-SHOE	N.Y.C.LINES	1340	1080	1067	980	
374 375	PITTSBURG		851	746	693	607	

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PART II.

BRAKE BEAMS.

1. REVISION OF SPECIFICATIONS FOR TESTS ON No. 2 BRAKE BEAMS.— The committee recommends that the following be substituted for the specifications for No. 2 brake beams, as given in the M. C. B. Proceedings for 1913, page 854:

B. BEAM NO. 2.

4. INITIAL LOAD.— Apply an initial load of 12,000 lb., then reduce to 500 lb. Reset the deflection instrument to zero.

5. TEST LOAD.— Apply a test load of 12,000 lb. and under this load measure the deflection, which is desired to be $\frac{1}{16}$ in. or 0.0625, but should not exceed 0.07 in.

6. SET LOAD.— The beam must then be loaded to 24,000 lb., after which the set shall not exceed 1-100 of an in.

6½. TOTAL DEFLECTION TEST.— The brake beam shall stand a total motion of the head of the machine of not less than 2 in. without failure at any point.

This change is recommended because it is more in accordance with engineering practice to determine the strength and stiffness of structures at or below the elastic limit rather than to determine the load which will produce actual failure or destruction, it being understood that no part or structure will safely withstand repeated stresses above the elastic limit. It is apparent that the latter forms the proper criterion for safety. It is assumed in the above specifications that 12,000 lb. represents the maximum working load and 24,000 lb. the load corresponding to the elastic limit of the beam, corresponding respectively to approximately 15,000 lb. and 30,000 lb. fiber stress.

2. WEIGHTS OF HEADS AND STRUTS.— The committee has considered the desirability of adding to these specifications a limitation as to the minimum weight of heads and struts allowable and has collected considerable information concerning the weights of these parts now in use. Communications from the various manufacturers of brake beams show a considerable variation in weights of struts and heads, due largely to variations in design.

Officials of the Pennsylvania Railroad report 9 lb. for the weight of head and 11 lb. for the weight of strut as a fair average. The list furnished by a firm which supplies nearly half a million brake beams to nine different railway lines shows weight of head varying from 9 to 11 lb. each and weight of struts varying from 9 to 12 lb. each, with an average weight of about 10 lb. for either head or strut.

Professor L. E. Endsley has called the attention of the committee to the fact that, while the average distance between compression and tension members is about 12½ in., there is some variation in this length which would affect the strength of the strut. In other words, longer struts would need a greater weight for the same strength.

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The committee believes that some specification which shall define the strength of these two important members should be added to the other specifications, but that specifying a minimum weight would not be sufficiently definite. The committee would like the benefit of further discussion on this point.

3. STANDARD No. 2 BRAKE BEAM FOR RECOMMENDED PRACTICE.—The committee has been asked by the Executive Committee of the Association to reopen the subject of a standard No. 2 brake beam for Recommended Practice. It seemed to the committee that the most direct way of obtaining information on this subject was to address a letter of inquiry to members, asking their opinion on three points. Circular No. 27, under date of March 28, was accordingly sent out from the office of the Secretary, containing the following questions:

1. Is it desirable at this time to adopt a standard No. 2 brake beam as Recommended Practice?

2. If so, would you consider the beam shown in annexed Sheet 17-B a suitable standard for this purpose?

3. If you deem the proposed standard unsuitable, please indicate your reasons.

A summary of the replies shows answers as follows:

Question 1: 22 yes; 8 no.

Question 2: 19 yes; 11 no.

Question 3: 5 prefer the use of present standard dimensions and see no need of standard detail; 5 do not like the design proposed, and consider it inferior to some now in use.

In view of the results of this preliminary vote, the committee would recommended that Beam No. 2, shown in Sheet 17-B, be adopted as Recommended Practice, and would ask that the question be again submitted to letter ballot. The committee would justify its recommendation by calling attention to the decided majority in favor of this step and to the further fact that adopting a standard of this kind as Recommended Practice for a few years will give the Association and the committee something definite to build upon in forming a standard for brake beams which shall be acceptable to all members of the Association. A trial of the proposed standard by various railroads will give more definite information as to changes which should be made in the design and construction.

As last year the committee was indebted to the New York Central Lines for permission to publish the results of various tests on brake shoes, so this year the committee would express its indebtedness to the Pennsylvania Railroad Company for permission to publish the results of tests on brake beams conducted at the Altoona laboratories. See Appendix. Some figures, accompanied by photographs, submitted by Mr. C. D. Young of the committee, show that about 75 per cent of the defective brake beams found on the Pennsylvania Road were removed on account of worn brake heads, indicating that if beams were properly

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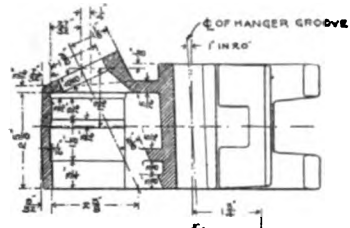
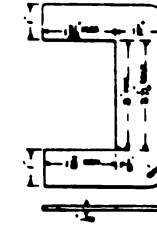
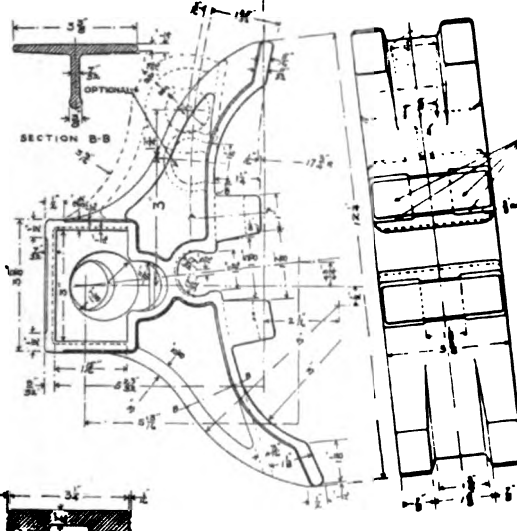
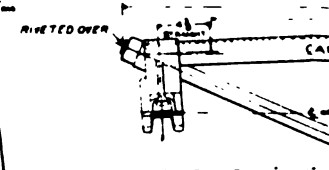


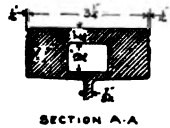


CHANNEL CALIPER GAUGE

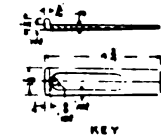

OPTIONAL
SECTION B-B
LUGS CORED AS DESIRED.
THESE MUST HAVE FOUR BROAD BEARING
SURFACES WHICH SURFACES MUST BE EQUAL
TO THE CONTACT AREA OF THE SHOE

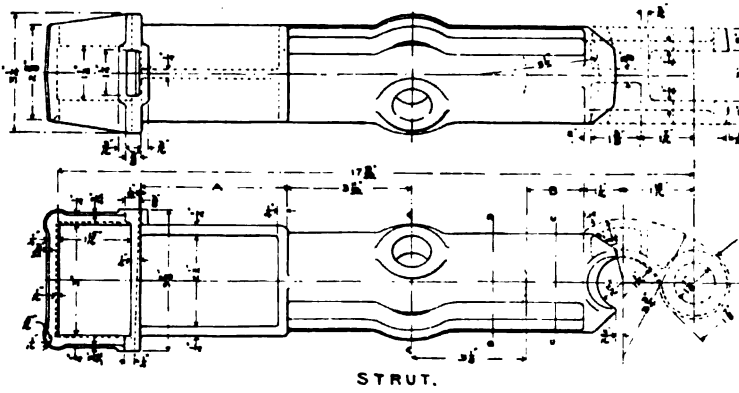


BRAKE HEAD.



LEVER PIN HOLE IN FRONT OF BRAKE HEAD	A	B
5"	3	2
	4	1





STRUT.

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hung and the locations for hanger holes and hanger brackets were standardized, a large number of failures could be prevented. Failure of the compression and tension members is further shown to be due largely to poor fits between the heads and struts and the other members. In other words, it is apparent that a more careful standardization of brake beams would result in a much smaller percentage of failures and much less expense to the railway companies.

PROF. C. H. BENJAMIN, Chairman,
C. D. YOUNG,
R. B. KENDIG,
J. F. DE VOY,
C. B. YOUNG,

Committee.

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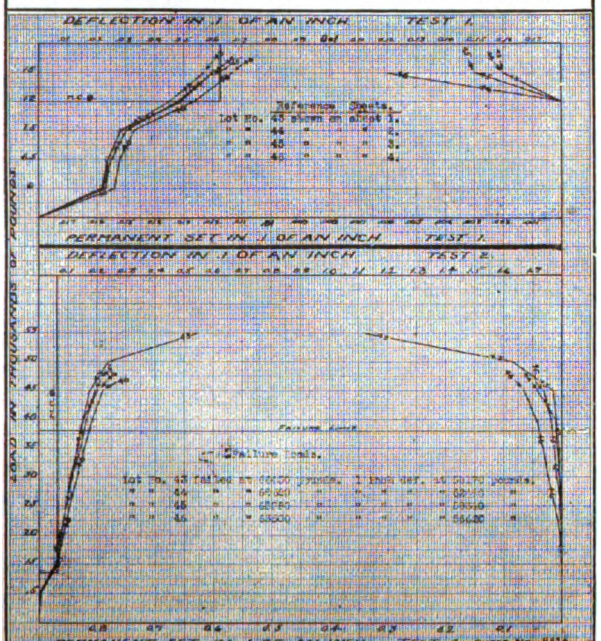
M. P. 479 D

PENNSYLVANIA RAILROAD COMPANY

PHILADELPHIA, BALTIMORE & WASHINGTON RAILROAD COMPANY
NORTHERN CENTRAL RAILWAY COMPANY
WEST JERSEY & SEASHORE RAILROAD COMPANY

SHEET No. 8616. TEST DEPARTMENT REPORT No.

Brake Beam Test. Buffalo Brake Beam S C. ALTOONA, PA. 3-4-14.


DEFLECTION IN 1/100 OF AN INCH TEST 1
Reference Sheets.
Lot No. 43 shown on sheet 1.
" " 44 " " " 2.
" " 45 " " " 3.
" " 46 " " " 4.
PERMANENT SET IN 1/100 OF AN INCH TEST 1.
DEFLECTION IN 1/100 OF AN INCH TEST 2.
LOAD IN THOUSANDS OF POUNDS
Failure Loads.
Lot No. 43 failed at 66000 pounds, 1 inch def. at 50470 pounds.
" " 44 " " 66000 " " " " " 52000 "
" " 45 " " 65850 " " " " " 54910 "
" " 46 " " 63000 " " " " " 56420 "
PERMANENT SET IN 1/100 OF AN INCH TEST 2 SHEET No. 8616

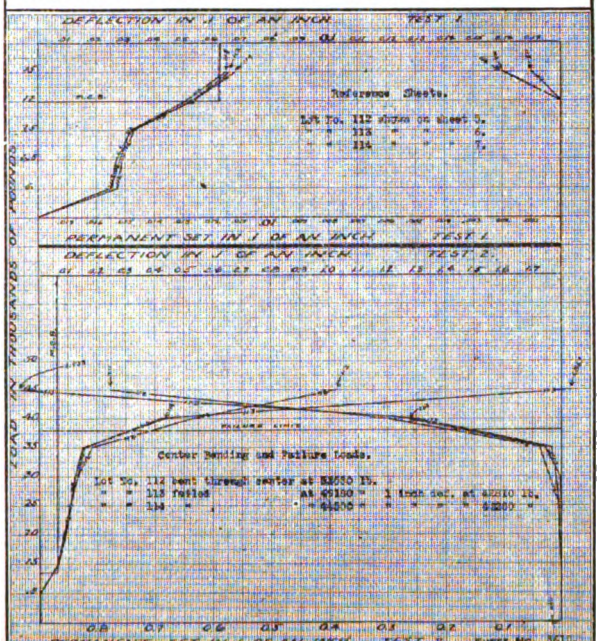
M. P. 479 D

PENNSYLVANIA RAILROAD COMPANY

PHILADELPHIA, BALTIMORE & WASHINGTON RAILROAD COMPANY
NORTHERN CENTRAL RAILWAY COMPANY
WEST JERSEY & SEASHORE RAILROAD COMPANY

SHEET No. 8615. TEST DEPARTMENT REPORT No.

Brake Beam Test. Simplex Dy. Appli. Co. "Ajax" 2 Beam". ALTOONA, PA. 3-4-14.


DEFLECTION IN 1/100 OF AN INCH TEST 1
Reference Sheets.
Lot No. 112 shown on sheet 5.
" " 113 " " " 6.
" " 114 " " " 7.
PERMANENT SET IN 1/100 OF AN INCH TEST 1.
DEFLECTION IN 1/100 OF AN INCH TEST 2.
LOAD IN THOUSANDS OF POUNDS
Center Bending and Failure Loads.
Lot No. 112 went through center at 52650 lb.
" " 113 failed " 46180 " 1 inch def. at 42810 lb.
" " 114 " " 44805 " " " " 42200 "
PERMANENT SET IN 1/100 OF AN INCH TEST 2 SHEET No. 8615

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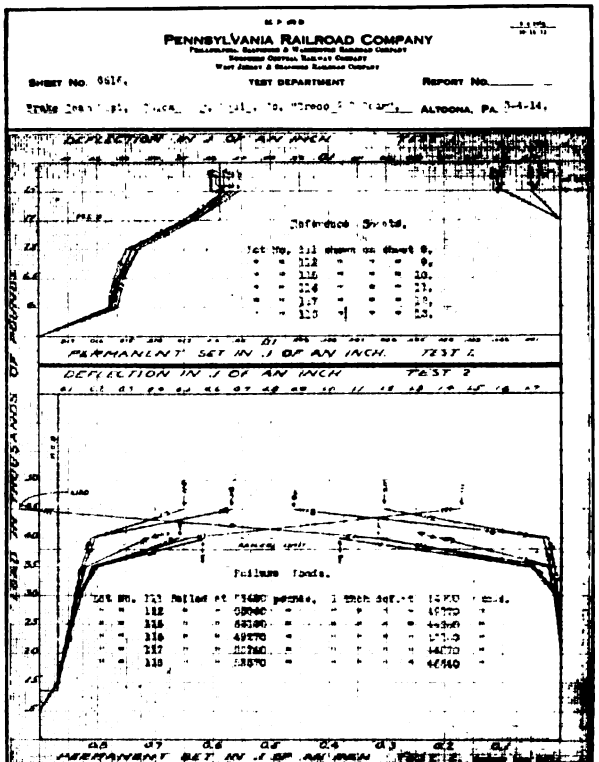
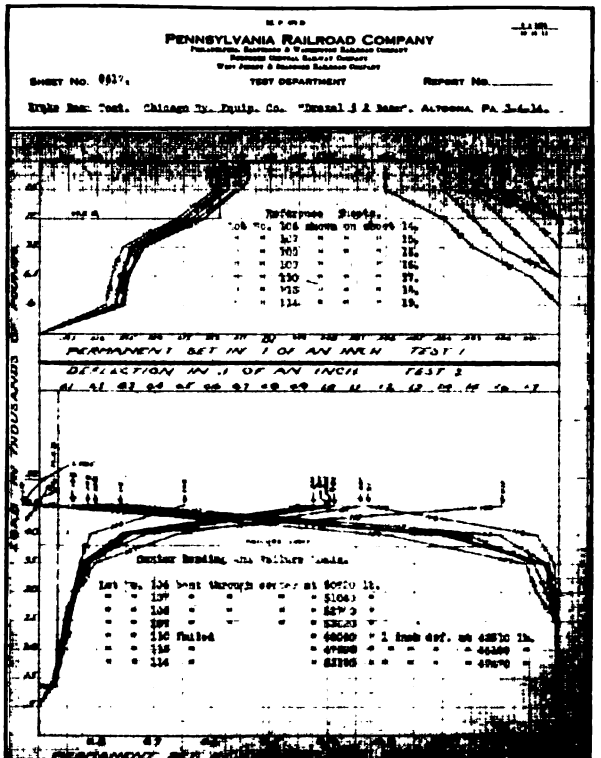

PENNSYLVANIA RAILROAD COMPANY
TEST DEPARTMENT
ALTOONA, PA.
DEFLECTION IN .1 OF AN INCH
PERMANENT SET IN .1 OF AN INCH
DEFLECTION IN .1 OF AN INCH
Failure Points.
PERMANENT SET IN .1 OF AN INCH


PENNSYLVANIA RAILROAD COMPANY
TEST DEPARTMENT
Brake Beam Test. Chicago Ry. Equip. Co. "Diamond S 2 Beam". ALTOONA, PA. 3-4-14.
Reference Points.
PERMANENT SET IN .1 OF AN INCH
DEFLECTION IN .1 OF AN INCH
Center Reading, the Failure Point.
Test No. 136 Failed

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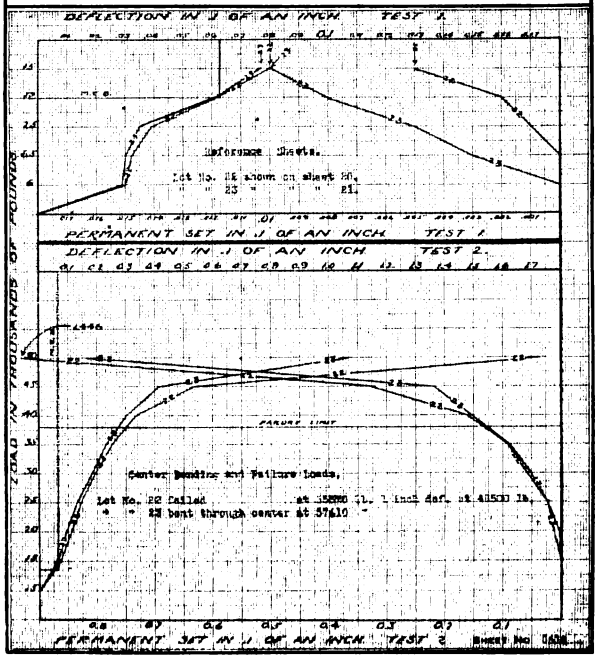
M. P. 49 D

PENNSYLVANIA RAILROAD COMPANY

PHILADELPHIA, BALTIMORE & WASHINGTON RAILROAD COMPANY
NORTHERN CENTRAL RAILWAY COMPANY
WEST JERSEY & SEASHORE RAILROAD COMPANY

SHEET No. 8618 — TEST DEPARTMENT — REPORT No. _____

Bridge Beam Test. Test #5. C & P Co. "P. T. T. 3#, 2 2 Seam" ALTOONA, PA. 3-4-11.


DEFLECTION IN 1/8 OF AN INCH TEST 1
Reference Sheets.
Lot No. 21 shown on sheet 20.
" " 23 " " 21.
PERMANENT SET IN 1/8 OF AN INCH TEST 1
DEFLECTION IN 1/8 OF AN INCH TEST 2.
LOAD IN THOUSANDS OF POUNDS
Center Bending and Failure Loads.
Lot No. 22 Failed at 35000 lb. 1 inch def. at 41530 lb.
" " 23 bent through center at 37410 "
FAILURE LINE
PERMANENT SET IN 1/8 OF AN INCH TEST 2
SHEET No. 8618

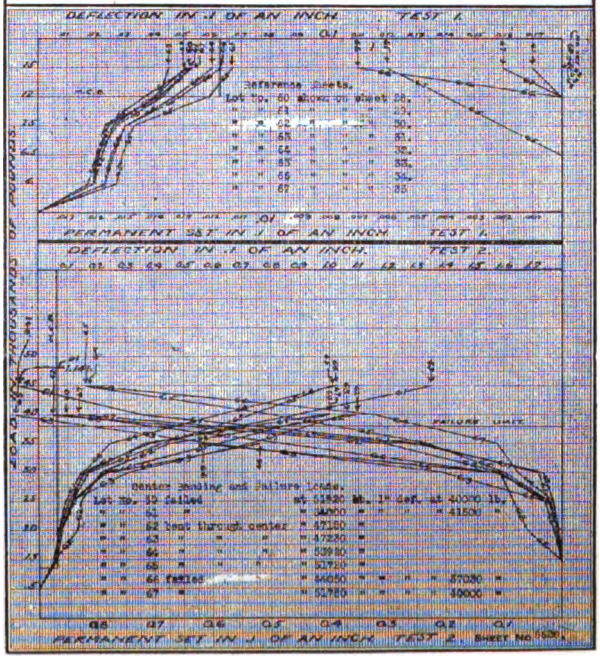
M. P. 49 D

PENNSYLVANIA RAILROAD COMPANY

PHILADELPHIA, BALTIMORE & WASHINGTON RAILROAD COMPANY
NORTHERN CENTRAL RAILWAY COMPANY
WEST JERSEY & SEASHORE RAILROAD COMPANY

SHEET No. 8620 — TEST DEPARTMENT — REPORT No. _____

Bridge Beam Test. Davis 3. J. Co. "Davis # 2 Seam" ALTOONA, PA. 3-4-14.


DEFLECTION IN 1/8 OF AN INCH TEST 1
Reference Sheets.
Lot No. 60 shown on sheet 20.
" " 61 " " 20.
" " 62 " " 21.
" " 63 " " 21.
" " 64 " " 22.
" " 65 " " 22.
" " 66 " " 22.
" " 67 " " 22.
PERMANENT SET IN 1/8 OF AN INCH TEST 1
DEFLECTION IN 1/8 OF AN INCH TEST 2.
LOAD IN THOUSANDS OF POUNDS
Center Bending and Failure Loads.
Lot No. 60 failed at 41530 lb. 1" def. at 40000 lb.
" " 61 " " 41500 "
" " 62 bent through center 47120
" " 63 " " 47230
" " 64 " " 53980
" " 65 " " 51720
" " 66 failed " 44050 " " " 37080 "
" " 67 " " 51780 " " " 39000 "
FAILURE LINE
PERMANENT SET IN 1/8 OF AN INCH TEST 2 SHEET No. 8620

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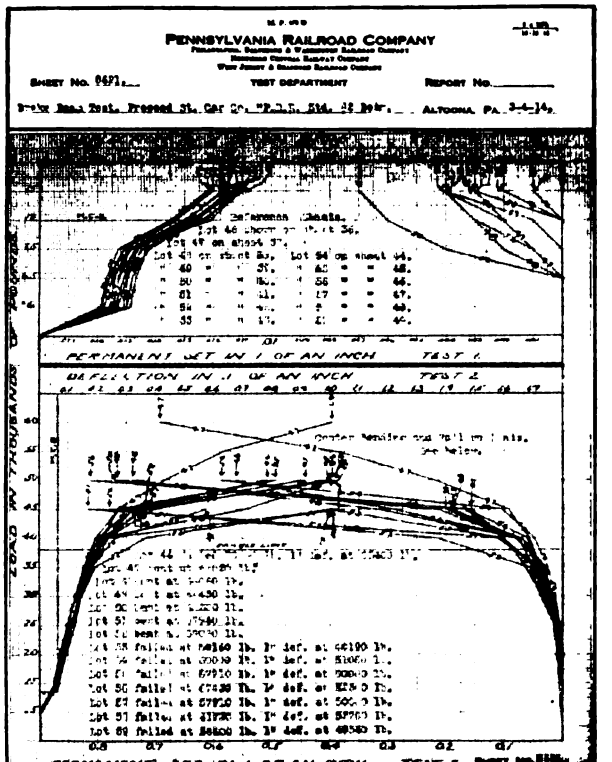
PENNSYLVANIA RAILROAD COMPANY
TEST DEPARTMENT
PERMANENT SET IN 1 OF AN INCH TEST 1
DEFLECTION IN 1 OF AN INCH TEST 2
LOAD IN THOUSANDS OF POUNDS
PERMANENT SET IN 1 OF AN INCH TEST 1
DEFLECTION IN 1 OF AN INCH TEST 2
LOAD IN THOUSANDS OF POUNDS

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THE PRESIDENT: Mr. DeVoy, with your permission, I think we had better handle this report in two parts. First we will take the brake shoe part, and then take up the part pertaining to brake beams. Therefore, the first part of the report is open for discussion.

MR. YOUNG: In reference to the report, the committee did not have time to review Mr. Endsley's report which was sent to Mr. Benjamin, due to the work which he did. I think the Association is indebted to Purdue University for having made the experiments this year on their own time. They had little time to review the conclusions of Professor Endsley.

In paragraph 2, from the bottom of page 4, under "Notes Concerning Tests," the first paragraph, in which the statement is made that the coefficient of friction with increased load is practically uniform, is not borne out for a similar shoe such as the plain cast-iron shoe, in tests which we have made, a very elaborate series of tests on the M. C. B. machine, and I think the probability of this apparent inconsistency is due to the fact that we have found by placing cracks in the shoe, that the coefficient of friction is increased. These Purdue tests, apparently, were run in the order of low pressures first and high pressures afterward, and undoubtedly the practice developed at the higher pressure tests. Therefore, the coefficient of friction increased with the cracking of the shoes. You will notice from the photographs of the shoe at the end of the test, that the shoes have cracked. I believe if the shoes had been in the same condition for all tests, you would have found about the same law applied for the plain cast-iron shoes as applied for the Diamond S and the U shoe of the New York Central as well as the Pittsburgh shoe. I believe that with the data before the committee, that we have available, more light could have been thrown on this apparent inconsistency. The other inconsistency pointed out in the loss of wear is taken care of, I believe, by the same condition, namely, the cracking of the shoe. A shoe which is cracked, and rendered thereby more flexible, we have found, wears less per unit of foot-pound of work done than does a solid shoe, due to the fact that it is permitted to conform to the contour of the wheel, whereas the rigid shoe has only a particular spot for the wear in question. I think it

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would be very desirable for the Association to have the three reports of the committee consolidated into one report. We now have complete data for these shoes.

THE PRESIDENT: Is there any discussion on the first part of this report?

MR. A. R. AYER: (N. Y. C. Lines): This series of tests was started, I understand, with a brake-shoe pressure of 12,000 pounds, on a steel-tired wheel. A pressure of 9,000 pounds on clasp brake is equivalent to or probably better than 18,000 pounds on a single shoe brake, and it might be well if the committee, in continuing its work in other years, could make some tests with a 9,000-pound shoe pressure.

THE PRESIDENT: Professor Endsley, would you like to add anything to what is contained in the report? We would be glad to hear from you if you have anything to offer.

PROF. LOUIS E. ENDSLEY (Purdue University): I do not know that I have anything to add. I think Mr. Young is entirely right in what he said about the brake shoe which is cracked, affecting the loss in weight. During the tests at 16,000 pounds pressure two of the kind of shoes cracked and the loss in weight was considerably higher at this pressure than in the tests at either 14,000 or 18,000 pounds. This is well shown by the curves. With reference to tests at a lower pressure of 7,000 or 8,000 pounds these shoes have already been tested at a pressure of 6,840 pounds, this being the heaviest pressure used in the M. C. B. tests up to a few years ago.

THE PRESIDENT: There are two suggestions, one offered by the committee on the bottom of page 5, in regard to consolidating the results of the various tests, and the other one was offered by Mr. Ayers in the discussion as to the testing of pressures of 9,000 pounds for clasp brakes; do you wish to take any action on those suggestions?

MR. YOUNG: For Mr. Ayers' information, I believe that having data on the shoes at 6,840, 12,000, 14,000, 16,000 and 18,000 lb. you can draw an inclined curve and obtain the approximate coefficient of friction at any of the loads intermediate between 12,000 and 6,000 lb. As you know, this report has been

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delayed, due to the finances of the Association, and the work this year was done by Professor Benjamin, at his expense, I believe, and I think that if a proper compilation is made of all the results, the Association will have just the information which Mr. Ayers is seeking, namely, the coefficient of friction, at all brake-shoe loads. For clasp brakes, the ordinary clasp brake, the brake-shoe load, under service applications, is pretty close to 6,000 lb., and for emergency close to 9,000, and I believe a curve can be drawn, with the data which we have, giving that information, and thereby obviate the necessity and expense of future tests.

MR. BRAZIER: Certainly the Association is greatly indebted to Dean Benjamin and Purdue University and the committee, and I would move that the report of the Brake Shoe Committee be accepted, and their recommendation on page 5 be carried out.

Motion seconded.

THE PRESIDENT: All those in favor say "aye"; opposed, "no." It is carried. Mr. DeVoy, you might read or abstract the second part, as you think proper.

MR. DEVOY: I do not think there is anything to answer. Mr. Young has answered the several questions in regard to the shoes.

(Mr. DeVoy thereupon completed the reading of the report.)

THE PRESIDENT: The second part of the report on brake beams is before you for discussion.

MR. AYERS: Without attempting to criticise the design of the beam itself as submitted, I would like to call special attention to the last part of the committee's report, where it is stated that "about 75 per cent of the defective brake beams found on the Pennsylvania road were removed on account of worn brake heads, indicating that, if beams were properly hung and the location for hanger holes and hanger brackets were standardized, a large number of failures could be prevented." In the design of the head as shown on the proposed No. 2 beam — while there is shown a different hanging in dotted lines, the solid line head shows the method of suspension that I think is generally recognized as the least satisfactory. It would seem that the limiting dimensions for the brake beam, together with the very rigid

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specification for strength that is submitted, would take care of the beam proposition, but in my opinion, one of the most important phases of the whole subject is to standardize and adhere to the proper method of hanging the beam, because our experience is exactly in line with the experience of the Pennsylvania Railroad, which they have reported, that the biggest trouble is in the beams being improperly hung and falling off the car.

THE PRESIDENT: Is there any further discussion?

MR. CHAMBERS: If it is possible I would like further information concerning the 75 per cent of brake beams removed with worn head, as to whether any account was taken as to what percentage of them might have been due to broken shoes or worn shoes.

THE PRESIDENT: Can you give any information on that point, Mr. Young?

MR. YOUNG: This examination was made at the scrap piles at the terminal points, and it is difficult, after a brake beam has been removed, to determine definitely whether it is due to improper hanging or improper maintenance of the shoes. The percentage given represents the judgment of the inspector after examining the brake beam very carefully.

A corresponding investigation, made by Mr. DeVoy on the St. Paul, did not include quite as many arguments, but the results were practically the same; in other words, a tabulation, made on the same basis as our tabulation, agreed as to the condition of the scrap pile; but you will readily recognize that it is quite impossible, when you have a brake beam removed to the scrap pile, to say definitely whether the head was worn, due to improper shoe maintenance, or hanging conditions, and this tabulation was made on the best judgment of the inspector. In our case, the inspector is a man who has had considerable experience in following up failures of brake shoes and brake beams.

It is difficult, I might say, to maintain shoes properly on the truck, if the beams are not properly hung. As soon as the shoes are applied they take a false position, are worn off rapidly, and then the beam becomes defective due to a worn head.

THE PRESIDENT: I noticed in answer to question No. 2,

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there were eleven who answered " no " — quite a large proportion, considering the total number of answers. Possibly some of those who voted " no " are here, and would like to explain their reasons.

MR. YOUNG: There is a mistake on page 17. The space of the head and length over all was placed on this cut before last year's letter ballot was voted on as to spacing, and this dimension should be reduced one-quarter of an inch in view of the action on the letter ballot last fall — the space between the center of head should be 5 ft., and the length over all should be 5 ft. 6½ in. instead of 5 ft. 6¾ in.

THE PRESIDENT: The Secretary has had his attention called to that, and that will be corrected.

MR. YOUNG: In reference to Mr. Ayers' remarks on the design of brake head submitted, this is copied from the brake head which has been our standard for some time, and so this design does not represent any change in that respect. I believe the committee, at the time that design was formulated, agreed on the center location as an ideal one for brake construction. Of course, the center line of the hanger should go through the working face of the shoe. This location is as near correct as you can get it under practical conditions, and if the location is properly selected, it seems to be satisfactory.

MR. SHEAFE: I would like to ask, with reference to the Pennsylvania inspection, relative to broken brake beams, whether they were inside or outside hung?

MR. YOUNG: The brake beams were accumulated in the scrap piles and we did not know whether they were inside or outside hung. When there was a sufficient number at any one point our inspector went there to examine the pile, and it was impossible for him to tell how they were hung on the car.

MR. AYERS: There is not much question that the best location for the hanger is, theoretically, at the center, but practically it makes a brake beam hanging depend on the brake shoe remaining in place, and I think it will be found, quite generally, in practice, that if the brake shoe happens to break off, or for any reason is lost off, there is a very excellent chance of the hanger coming off, and the end of the brake beam dropping down, and that was the reason why I took some exception to that design of brake head.

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MR. TATUM: There is one part of this report I can not quite understand, and if it is possible, I should like to have it explained to me. I refer to the latter part of page 16, where it says, "It is apparent that a more careful standardization of brake beams would result in a much smaller percentage of failures and much less expense to the railway companies." I can not quite understand how the standardization of the brake beams would prevent brake beams getting away from their fastenings and becoming damaged. It appears to me that the proper attachment of the brake beam to the truck will do more than anything else to prevent damage to brake beams than would be had by making any brake beam a standard.

What I have found in my experience, not only in checking the scrap pile, but in going out along the road, and seeing where the failures have taken place, is that the failures are principally due to the improper method in which the brake beam is attached to the truck. Take the best brake beam we have — it matters not who the maker is — and attach it with a pot-hook hanger, the hanger being of small dimensions, the result is it will get loose, be destroyed, and cause derailments and other damage. Take the hook-and-eye hanger and it will do the same thing. Take the U-shaped hanger, and attach it to the brake beam with a small bolt to retain it in place. The bolt works loose and gives way and the result is the brake beam is destroyed, with a possible derailment of the car.

I find these troubles are principally due to the improper methods of attaching the brake beam to the truck. This matter has been so forcibly brought to the attention of the Baltimore & Ohio Railroad that it had to more securely attach the brake beams to the truck in order to get better support and more safety for the brake beams. The Baltimore & Ohio Railroad found, after going into this matter and making a more substantial hanger, attaching the hanger with a more substantial bolt to its place, that it held the brake beam in position, gave us much better results, and failures were very much reduced.

There is another point that might be considered, which results in brake-beam failures — that is, turning the car over on the dumping machine. This practice will loosen the keys, causing

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them to drop out, and the car gets away from the inspector with the key missing. The result is the shoe gets out of position and the brake beam goes down on the track.

Another thing we find is that sometimes the train men will take the brake shoe keys out to assist them in packing heated journals, because they do not care to go back a half mile to the caboose to get a packing iron. They forget to put the key in place, and the result is that the brake beam falls and causes trouble. The principal fault is not with the brake beam, but with the method of attaching it to the truck. What we must have is a substantial method of attaching the brake beam to the truck.

THE PRESIDENT: Is there any further discussion on the question of brake beams? If not, action on the whole report will be in order.

MR. DEVOY: Before such a motion is put, Mr. President, I will say that since this report was printed, the question has come up as to safety hanger attachments. My attention was called to it this morning. I have looked the matter up and find the following in this year's report of the Committee on Trucks: "Sheet 17-A shows Standard M. C. B. metal brake beam to have Safety hanger attachments.

"Committee on Standards referred the question of safety hanger attachments for brake beams to Truck Committee and the Truck Committee disapproves of safety hangers. See bottom of page 10 of their report for this year."

Inasmuch as the question was asked of the committee, I have called attention to it in that way. It is my opinion after looking into the matter, that possibly the question of safety hanger attachments properly belongs to the Brake Beam Committee, but it seems to be under the jurisdiction of the other committee, so that what action they take will really govern the matter. However, the matter is before you, so that you will understand it. I will be glad to answer any questions which you ask of me.

MR. GOODNOW: The question of the brake beam safety hanger was referred to the Committee on Car Trucks with the idea in using the inside-hung beam, the safety strap attached to

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the sand plank would be the one, and, therefore, that committee is the proper one to handle the question.

MR. DEVOY: I am calling attention to the fact so that everybody will have full information, as to whether they want to take action now or wait until the report of the Committee on Trucks is presented.

MR. HENNESSEY: I move that the safety hanger I-bolts shown in the text and in one of the cuts of the brake beam be omitted.

Motion seconded.

MR. YOUNG: It seems to me that is entirely in the hands of the Truck Committee. The brake beam has always been in the charge of one committee, and its detail has been cared for by the Truck Committee. The discussion of this matter properly belongs in connection with the report of the Committee on Trucks, it is their province to standardize the entire truck, and I think we should have this discussion reopened and perhaps have this motion presented when the Committee on Trucks presents its report. The Committee on Brake Beams has not considered, at any time, the attachment of the brake beam, feeling it was not in their province.

THE PRESIDENT: Mr. Hennessey, would it be satisfactory to you if this matter was deferred and brought up in connection with the report of the Committee on Trucks?

MR. HENNESSEY: It will be.

THE PRESIDENT: With the consent of the seconder of the motion, we will defer the discussion on that point until the report of the Committee on Trucks is presented.

MR. FULLER: I move that the report be accepted and referred to letter ballot.

THE PRESIDENT: All in favor of the motion say "aye"; contrary minded, "no." The motion is carried.

We will now have the report of the Standing Committee on Car Wheels, Mr. W. C. A. Henry, of the Pennsylvania Lines, Chairman.

The report is as follows:

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REPORT OF STANDING COMMITTEE ON CAR WHEELS.

To the Members:

The following resolution of the Committee on Maintenance of the American Railway Association, which was referred to the Master Car Builders' Association and the American Railway Engineering Association for investigation and report, has been referred to the Wheel Committee and the Committee on Track, respectively, of the two Associations:

"*Resolved*, That the subject of the contour of chilled car wheels and the throat clearances for frogs, guard rails and crossings be referred to the American Railway Engineering Association and the Master Car Builders' Association jointly for a full investigation and report with their recommendations for any change that they may conclude is desirable."

This subject originated with the Association of Manufacturers of Chilled Car Wheels, and your Committee has received a number of recommendations from the Wheel Manufacturers in the direction of heavier flanges.

There is not sufficient available data showing the performance of the latest design of chilled car wheel, or comparison of its performance with the earlier designs to warrant your committee at the present time making any recommendations in the matter. To increase to any extent the width of flange will involve in all probability changes in the track in the way of providing more clearance through frogs, guard rails and railroad crossings.
order to obtain information on the subject, Circular of Inquiry, dated May 1, was sent to the members of this Association, requesting that reports be made giving full information in regard to wheels that failed under fair usage, and it is hoped that all such cases will be reported.

Your Committee has communicated with the Committee of the American Railway Engineering Association, which has this matter in hand, and it is hoped that there will be sufficient information available that definite recommendations can be made at the next convention.

For the information of the members we wish to advise that the Bureau of Standards of the Department of Commerce, Washington, D. C., is preparing to make an experimental study of chilled car wheels, which will include foundry practice, investigation into the chemistry, metallurgy and mechanics of wheels, etc., and we are informed that it is the intention of the Bureau of Standards to ask the co-operation of the Wheel Manufacturers and the Wheel Users in making this investigation.

In order to provide means for measuring flat spots of one inch and two inches in length on passenger and freight car wheels respectively, it is recommended that two additional notches be provided in the present standard wheel defect gage, as shown on exhibit "A."

We desire to call attention to some errors that were made by the special committee which revised the specifications for wheels in 1913. It was the intention that these specifications were to be revised in form only and not in meaning; however, as these revised specifications were referred to letter ballot and adopted, it becomes necessary to bring the corrections before the

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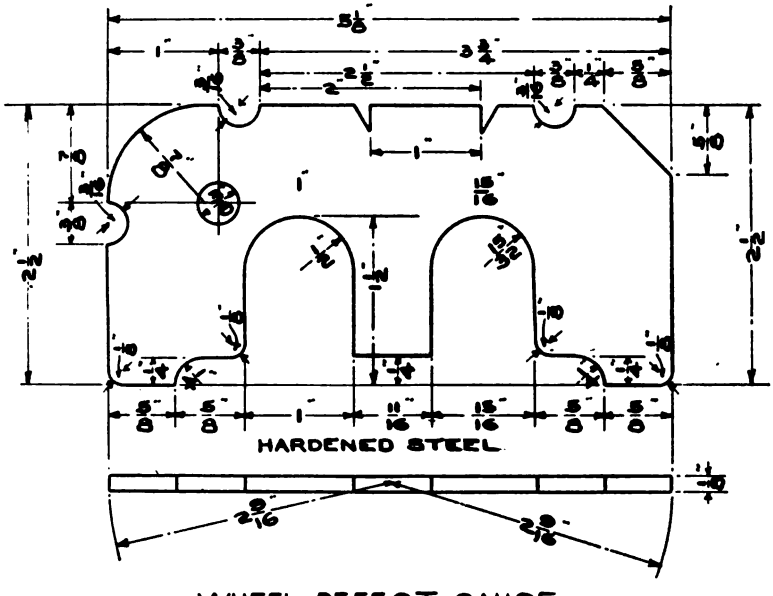
EXHIBIT A



WHEEL DEFECT GAUGE

Association. Under the heading "Markings," Paragraph 14, it is specified that the name of the purchaser, wheel number, weight of the wheel, and date made, etc., be plainly formed on the outside plate of the casting. This should be corrected by substituting for the word "Outside" the word "Inside," which is in accordance with previous practice. The last sentence of paragraph "B," under the heading "Thermal Test," reads as follows: "The time when pouring ceases must be noted, and two minutes later an examination shall not show the wheel broken in pieces or any cracks extending into or through the plate." This sentence should be changed to read as follows; which is in accordance with the 1912 specifications: "The time when the pouring ceases must be noted, and two minutes later an examination of the wheel must be made. If the wheel is found broken in pieces, or if any cracks in the plate extend through or into the tread, all wheels of the same tape size as the wheel broken will be rejected."

When the specifications for steel wheels were re-written in 1913, under the heading of "Branding," the purchaser's name and serial number were omitted. It is recommended that this paragraph be changed to read as

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follows: "The name or brand of the manufacturer, date and serial number, shall be legibly stamped on each wheel; also purchaser's name and serial number, if specified. The tape size shall be legibly marked on each wheel." This change merely gives the paragraph the same meaning as was originally intended, and harmonizes with Sheet C-2.

Attention has been called to the fact that the maximum gross weight to be carried by car wheels of 625 lb. weight as shown on M. C. B. Sheet "N" is not in harmony with the specifications. As this sheet in its present form was adopted by letter ballot it becomes necessary to submit to the Association for Action the recommendation that it be corrected to specify a maximum gross weight not to exceed 95,000 lb. and thereby harmonize with the specifications.

The subject of a physical test for rolled and forged steel wheels is still under investigation, but we have as yet no recommendations to make.

At the present time there are three diameters of solid steel wheels specified as "Recommended Practice," namely, 33 in., 36 in. and 38 in., whereas for steel tired wheels there is but one diameter, 33 in. It would seem consistent that we have the same diameters for the steel tired as for the solid wheel.

The Association now has as Recommended Practice a design of tire 2½ in. in thickness, and there will, therefore, be required three diameters of wheel centers, namely, 28 in., 31 in. and 33 in.

To standardize the mounting of tire the following paragraph should be included under the heading "Recommended Practice." "Wheel centers should be machined to the exact diameter specified, and the tires finish bored to the diameter of the center, less 1-1000 in. for each inch in diameter."

In order to conform more nearly to the outlines of flanges of maximum thickness it is desirable to change one dimension of the maximum flange thickness gage, Sheet M. C. B. 16, as follows: "Radius with which the gaging point at the throat is struck to be changed from ⅝ in. to 1⅛ in. Likewise ⅝ in. radius as shown for minimum flange thickness gage to be changed to 1⅛ in."

The following recommendations are submitted:

1. Wheel defect and worn coupler gage to be modified as shown in Exhibit "A."

2. Specifications for cast-iron wheels, Paragraph 14, change first sentence to read as follows: "All wheels shall be numbered consecutively in accordance with the instructions from the railroad company purchasing them, and shall have the initials of such railroad company, also the wheel number, the weight of the wheel and month, day and year when made, plainly formed on the inside plate of casting."

3. Specifications for cast-iron wheels, paragraph 4 (b), change last sentence to read: "The time when pouring ceases must be noted and two minutes later an examination of the wheel must be made. If the wheel is found broken in pieces, or if any cracks in the plate extend through or into the tread, all wheels of the same tape size as the wheel broken will be rejected."

4. Specifications for Solid Wrought Steel Wheels, Paragraph IV, Branding, to read: "The name or brand of the manufacturer, date and serial number,

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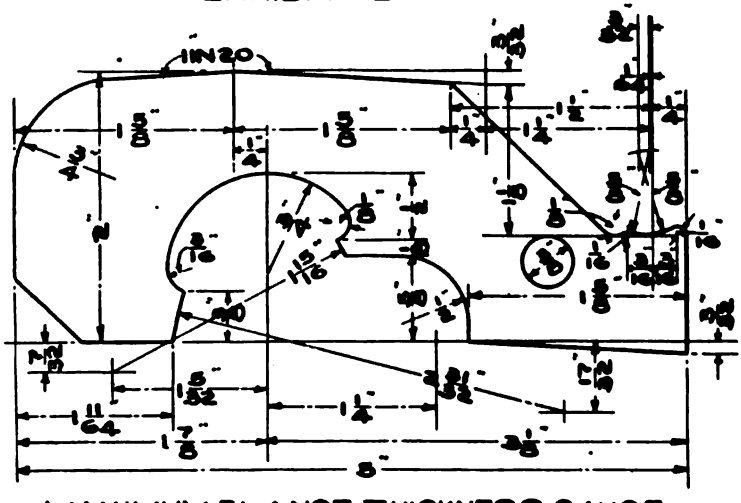
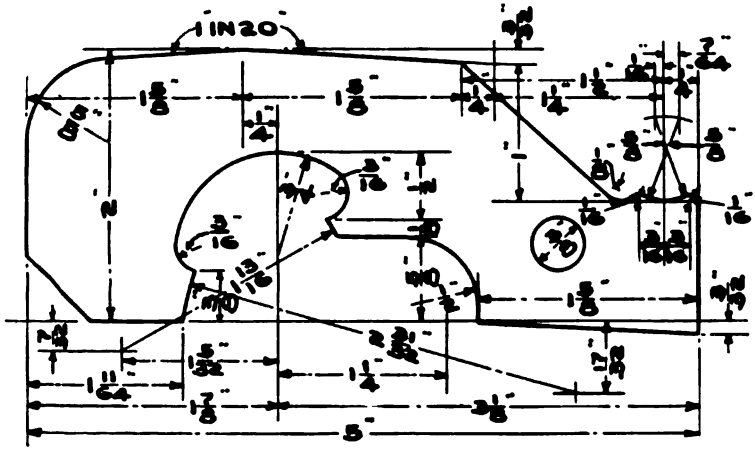
EXHIBIT B



MAXIMUM FLANGE THICKNESS GAUGE



MINIMUM FLANGE THICKNESS GAUGE

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shall be legibly stamped on each wheel; also purchaser's name and seria number, if specified. The tape size shall be legibly marked on each wheel· Sheet M. C. B. C-2."

5. Correct M. C. B. Sheet "N" to specify maximum gross weight not to exceed 95,000 lb.

6. Three diameters of steel tired wheels: 33, 36 and 38 in.

7. Three diameters of centers for steel tired wheels: 28, 31 and 33 in.

8. Maximum and minimum flange thickness gages to be as shown in Exhibit "B."

W. C. A. HENRY, Chairman,
A. E. MANCHESTER,
R. W. BURNETT,
R. L. ETTENGER,
O. C. CROMWELL,
J. A. PILCHER,
C. B. YOUNG,

Committee.

MR. HENRY: I would like to say something in regard to the circular of inquiry. Some of the replies indicate that it is not in all cases clearly understood what the committee desires. There is a request in the circular that we would like to have this report cover all wheels that broke under fair usage during the period from May 1, 1914, until May 1, 1915. These reports are to be made either quarterly or monthly at the convenience of the members. We do not care for any reports of wheels that failed under unfair usage, or that have defects in the nature of flat spots, shelled out, comby, or anything of that sort, but would like a full report of all the wheels which actually broke in two or more pieces, especially in the case of any failure involving the flange, we would like to have the thickness of the flange, and the exact location and direction of the fracture. We felt that in order to make an intelligent report on this subject to the next convention, we must have more information than is now available.

MR. FULLER: Does that include hot wheels?

MR. HENRY: Yes, if they actually break.

MR. GOODNOW: Does it include both passenger and freight?

MR. HENRY: Yes. I would mention also that the Committee on Standards and Recommended Practices has called the attention of the Committee on Wheels to a number of errors in plates

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M. C. B.—O. P. Q. R. and S. These are all practically errors of omission, and we have requested the Secretary to make the necessary corrections.

THE PRESIDENT: The report is before you for discussion. There are quite a number of recommendations here. It may be that some of these should be discussed, and possibly you may wish to ask some questions in regard to the committee's work on these points.

MR. SHEAFE: I wish to refer to the argument in the recommendations which covers the branding of steel wheels. This work is very indifferently done by manufacturers at times, making it almost impossible to really identify the number of the wheel after it is in service. I think it would be valuable for the committee to determine what should be the standard branding of steel wheels, the size of the letters and the depth of them, as well as the form of stencil.

THE PRESIDENT: This question of wheels is one of very great interest. There are a great variety of them. The Secretary suggests the car whacker who sent us the official gavel was of the same opinion. He probably has seen plenty of evidence to justify his views. It seems to me as though this is a matter which should be discussed pretty fully. We have ample time before the close of the meeting. We are a little ahead of our schedule. We will be glad to hear from any member who wishes either to give us the benefit of his experience or to ask questions.

MR. O. C. CROMWELL (Baltimore & Ohio R. R.): I would like to supplement the remarks of the Chairman relative to the information regarding the direction in which the flanges failed on the cast-iron wheels, and the request which has been made for monthly or quarterly or semi-annual reports in connection with the failure of these wheels. The committee has before it the question of increasing the thickness of the flange, and we want to try to find out how many flanges are actually failing, whether new or old, whether they are worn flanges or relatively new flanges, line and angle of fracture, and similar items of information. There appears at the present time to be no particular data on that subject, and before we can intelligently handle the matters committed to the committee, that information should be in the

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hands of the committee. We have this impression generally — that it is not the worn thin flanges that usually fail. It is more nearly the normal flange or the flange on a wheel soon after it is put into service. It is important that we get this information so that we can handle the matter intelligently.

MR. MACBAIN: In connection with the remarks of the gentleman from the B. & O. R. R. yesterday I wired our Engineer of Tests to send us a little information along that line. He did not have time to do justice to the matter, but this is the information he sends me:

"The removals were on account of the following causes: Tread wear, 26.8 per cent; chipped rim, 5.5; slid flat, 24.9; shelled, 8.0; worn flange, 23.0; chipped flange, 1.3; seamy, 5.5; broken tread, 3.5; broken wheel, 0.2; broken flange, 1.3 — total 100.00."

As to the percentage of broken flanges in cast-iron wheels, I have the following telegram this morning:

CLEVELAND, OHIO, June 9, 1914.

Broken flanges in per cent cast-iron wheels worn out and failed: None for 625 lb., eight-tenths of one per cent for 675 lb., three per cent for 725 lb. wheels.

THE PRESIDENT: That is very interesting information. Possibly some other members may have information to submit. It is very difficult for a committee to go ahead with their work and draw conclusions without having at its command an abundance of data based on actual experience. Each member of the Association should consider it an important part of his duty to furnish such information when asked for by the committee. I hope the request of the chairman of this Wheel Committee will be fully complied with in the way of furnishing information.

MR. FLORY: Referring to recommendation 5, "specify maximum gross rate not to exceed 95,000 lb." I will ask the committee whether that includes the weight of the wheel or not. If it includes the weight of the wheel taking a 60,000 lb. car, and giving a ten per cent overload, it only leaves 29,000 lb. for the light weight of the car. A great many roads have cars the light weight capacity of which is considerably more than that.

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MR. HENRY: My recollection is that it does not, but the recommendation was made so that the plate would harmonize with the specifications; in other words, the specification reads that way at the present time.

MR. H. H. VAUGHAN (Can. Pacific Ry.): Would it not be better to make reference to the tread in the thermal test a little clearer? Is it the intention that the crack must extend through the tread fully on the thermal test in order that the wheel shall be rejected?

MR. HENRY: It must extend through the tread.

MR. VAUGHAN: Through or into?

MR. HENRY: Through the tread.

MR. VAUGHAN: What do you mean by "through the tread?"

MR. HENRY: Clear into the tread. If the crack extends through or into the tread.

MR. VAUGHAN: The crack extending into the rim is not sufficient to disqualify it?

MR. HENRY: I consider the rim a portion of the tread.

MR. VAUGHAN: I should say a crack could not extend into the tread unless it went into the rim.

MR. HENRY: I do not know how you draw the line where the tread ends and the rim begins. They constitute two separate portions of the wheel.

MR. VAUGHAN: The tread itself, the outer portion, is what is intended by the statement?

MR. HENRY: The actual tread of the wheel is what is intended.

MR. VAUGHAN: Not the rim portion.

MR. HENRY: The tread.

When these specifications were revised in 1913 by a special committee, the committee, in error, I believe, changed the meaning. As they read in 1913, if a crack extended into the plate, it caused the rejection of the wheel. That was not the intention of the specifications as adopted prior to that time. A crack in the plate is not intended to be a cause for the rejection of the wheel, but if the crack extended into the rim or tread, it was; in other

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words, the meaning in 1913 was different from the meaning in 1912, or the meaning recommended at the present time.

MR. VAUGHAN: What I am intending to convey is, that it makes quite a difference in the inspection of the wheels whether the crack must extend clear through into the tread, or whether a crack extended into the rim is sufficient to cause a wheel to be discarded. I do not think that a wheel should be accepted under the thermal test, if the crack extends into the rim.

MR. HENRY: The meaning of that clearly is, if the crack extends through the plate into the rim of the wheel —

MR. VAUGHAN: That is what I think it should be —

MR. HENRY: Yes, we did not intend to make any distinction, if the crack runs up into the chill of the wheel, what you call the tread.

MR. VAUGHAN: I call the tread the outside portion which bears on the rail. That point is liable to come up under inspection.

MR. HENRY: What the committee had in mind was the rim and not merely the outside portion.

MR. VAUGHAN: I agree with you and think it should be so; that is the reason I brought the point up.

MR. HENRY: I think it will be agreeable to substitute the word " rim " for " tread."

MR. VAUGHAN: I think that should be done.

THE PRESIDENT: If Mr. Henry is willing to make that change, we would like to have it voted on.

MR. HENRY: I move the change in the wording be made, that " rim " be substituted for " tread."

THE PRESIDENT: I think that will be satisfactory. If there is no objection the committee will substitute the word " rim " for " tread."

MR. PRATT: I suggest, instead of substituting these words for one another, that we add after the word " tread " the word " rim," and then there will be no possible question. Make it read " or if any cracks in the plate extend through or into the tread or rim."

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MR. YOUNG: The error was made by the Committee on Form in redrafting the form of the wheel specification. The Secretary of the Association of Manufacturers of Car Wheels called Mr. Taylor's attention to the fact that there had been a change made, and this was then sent by Mr. Taylor to the Car Wheel Committee, with the opinion expressed by the committee which changed the specification that there was no intention of making any change, except in form. I am quite sure that the manufacturers did not intend that this clause shall be "through the rim." They intended it to be through the tread, which they mean shall cover that portion running up into the chill, so that you could see the defect, and this would be visible from the outside surface of the wheel. I quite agree with the committee that it should be "into the rim," and although the manufacturers changed the description, that is what they are advocating. I want to call your attention to this matter, to give you the views of the manufacturers of the cast-iron wheel.

THE PRESIDENT: In view of the question which has arisen as to what is intended, it would seem as if the matter should be cleared up, before any final action is taken on the report of the committee.

MR. YOUNG: We have time to clear it up right away. If the committee agrees in the change of "tread" to "rim," that settles the question.

MR. HENRY: That was the idea the committee had in mind when this matter was gone over. They probably did not select the best word for the purpose, but that was the idea they wished to convey; they think the word "rim" is the better word.

THE PRESIDENT: As I understand it, it is the desire of your committee that that change should be made, substitute the word "rim" for the word "tread."

MR. HENRY: Yes.

MR. PRATT: Why is it considered necessary at this time to add to our standards additional sizes for steel-tired wheels?

MR. HENRY: It would seem consistent, in view of the fact that we have three sizes for solid steel wheels, and steel-tired wheels are sometimes interchanged, that we should have three

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sizes of the steel-tired wheel also. As far as the 38-in. wheel is concerned, I understand the use of that wheel is limited, both for the solid and steel tires.

THE PRESIDENT: If there is no further discussion a motion to accept this report and submit it to letter ballot will be in order.

MR. BRAZIER: I move that the report be accepted and submitted to letter ballot.

THE PRESIDENT: Gentlemen, you have heard the motion. All in favor say "aye"; contrary minded, "no." The motion is carried.

MR. KLEINE: If it is agreeable, at this time I would like to make an announcement on behalf of the Coupler and Draft Committee and the Truck Committee.

The Coupler and Draft Committee has an exhibit of the A and B couplers in the M. C. B. booth to the right of the convention hall. It is desired that all members of the Association visit the booth and look over these couplers. In that exhibit there are two experimental standard M. C. B. couplers which were subjected to a service testing machine with 30,000 operations. Down on Georgia avenue, there are three locomotives and one freight car which are also equipped with the experimental type A and B couplers.

The Truck Committee has on exhibition on Georgia avenue a 100,000 lb. capacity steel truck side which conforms to the specifications and limiting dimensions for the 100,000 lb. truck side, and they also have, separately, a 140,000 lb. truck, with 140,000 lb. truck side, cast steel bolster springs, and brake beams, all recommended M. C. B. standards.

THE PRESIDENT: This concludes the business schedule for this session, and if there is no objection, the meeting will stand adjourned until three o'clock.

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SECOND SESSION — WEDNESDAY AFTERNOON.

President Barnum called the meeting to order at 3:10 P.M.

PRESIDENT BARNUM: Gentlemen, in accordance with the time-honored custom of the Master Car Builders' Association, the meeting to discuss the rules of interchange will be presided over by the first vice-president. He will hardly need any introduction. I will turn the chair over to Mr. Crawford.

MR. D. F. CRAWFORD (Penna. Lines): Thank you, sir. I will try to fill it satisfactorily.

CHAIRMAN CRAWFORD: Mr. Secretary, will you please say what is the first thing to be produced at this meeting?

THE SECRETARY: Mr. Chairman, I would suggest that we take up Circular No. 42, from the Executive Committee. In the circular it was stated that the matter would be brought up at this meeting, and I believe this is as good a time as any to bring it up, just before the rules of interchange are considered.

CHAIRMAN CRAWFORD: If it is the pleasure of the convention, I will ask the Secretary to read the circular that he refers to, for the benefit of the members.

THE SECRETARY: Circular No. 42, dated May 11, 1914, is from the Executive Committee, and is as follows:

To the Members:

The following communication has been received from the Arbitration Committee:

"May 8, 1914.

"*To the Executive Committee:*

"The prices for labor and materials on repairs to foreign cars under the M. C. B. rules up to October 1, 1912, contemplated that the work be done at the actual cost of the labor and material, with no allowance to the repairing line for use or upkeep of facilities furnished, supervision, etc. To partially reimburse the repairing line for the use of its facilities and to stimulate the repairs to freight cars, the Association as of October 1, 1912, authorize the application of a flat 10 per cent increase to the net total of freight car repair bills. The 1913 convention adopted, at the recommendation of the Committee on Revision of Prices for Labor and Materials, an increase in this labor rate per hour of 16⅔ per cent, or from

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24 to 28 cents per hour, the 10 per cent increase on the net total of bills, authorized in 1912, being absorbed in this increase.

"At recent hearings before the Interstate Commerce Commission, on the request of private car owners for an increase in their mileage rates, it was developed very conclusively and forcibly that this increase of 16⅔ per cent was insufficient; that in repairing any cars, in order to compensate the repairing line for the use of its facilities, their upkeep, switching, supervision, etc., an overhead charge very considerably greater than the 16⅔ per cent provided must be made.

"While some non-members of the Association, and non-subscribers to the rules, accept charges, and bill for repairs under the rules, there are others who insist on billing against the railroads on the basis of their full cost, including full allowance for all overhead charges, the resulting charges being considerably in excess of the allowances under the rules, while the railroads, on repairs to cars of such owners, continue to bill in accordance with the rules. This condition is not equitable to the railroads, nor is it a condition which we can continue. Your committee feels that it will be necessary to take such action as will permit charges under the M. C. B. rules to be made on a basis that will represent cost and not loss. It does not feel that any distinction can consistently be made in charges as between members and subscribers to the rules and non-members and non-subscribers to the rules, but that any increase which may be made must apply to all car owners alike.

"Your committee therefore proposes that, in order to more fully compensate the repairing line, an addition of 65 per cent of the labor cost should be added to the bill to cover overhead expenses. As a 16⅔ per cent increase was authorized last year to partially provide for this, your committee would now recommend adding to the total labor cost enough to make up the 65 per cent for overhead charges, which is necessary to approximately cover supervision, use of facilities, upkeep of plant, switching, etc.

"For the Arbitration Committee:

"Jos. W. Taylor,
"*Secretary.*"

Your Executive Committee believes this matter of enough importance to send each member of the Association a copy of the letter, with the advice that it will be submitted to the members at the convention next month, and to suggest that they come prepared to consider it.

For the Executive Committee:

Jos. W. Taylor,
Secretary.

That is the circular, Mr. Chairman, which should be considered now.

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MR. CLARK: Owing to the importance of the subject, and in order that the matter may receive thorough consideration, I move that the question of an increase in the labor rate to cover overhead charges be referred to a special committee, with instructions to report next year.

Motion seconded.

CHAIRMAN CRAWFORD: Gentlemen, it has been regularly moved and seconded that this question be referred to a special committee to report at our next convention. The subject has been sufficiently important, as you have heard from the circular read by the Secretary, to bring it to the attention of the convention, and I would like to hear from the members, if there is any discussion, on the motion.

(Question called for.)

CHAIRMAN CRAWFORD: As many as may favor the motion made by Mr. Clark, that this important subject be referred to a special committee of the Association, to report at its next convention, will please say "aye." (Loud chorus of ayes.) Opposed, "no." (One no.) It is carried.

The Secretary tells me that the next order of business will be the report of the Arbitration Committee.

The report was presented by the Secretary, as follows:

REPORT OF THE ARBITRATION COMMITTEE ON (1) CASES ARBITRATED DURING THE YEAR; (2) REVISION OF THE RULES OF INTERCHANGE.

To the Members:

During the year Arbitration Cases Nos. 918 to 954 have been decided and distributed to the members, and a copy of same herewith submitted as a part of this report for your approval. During the year your committee has issued several circulars, all of which have been embodied in Circular No. 26, giving interpretations of points that have arisen during the year in the operation of the rules. The questions raised have not been such as have been actual cases for arbitration, but have arisen in different parts of the country in the ordinary interchange of traffic. Your committee believes that this procedure has been beneficial to all concerned and has resulted in lessening the work of the inspector, the bill clerk and all concerned.

The members individually and through the railway clubs in their

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vicinity have submitted such changes as they think desirable, and these have been considered, and under each rule for which changes have been suggested you will find the recommendations of your committee.

GENERAL.

Chicago Car Interchange Bureau, the C. I. I. and C. F. Assn. recommend that changes in the rules be printed in italics so that inspectors can more readily become familiar with the changes.

RECOMMENDATION: Your committee does not concur, but would recommend to the Association that the changes be covered by an insert similar to that used in the 1912 rules.

PREFACE.

Mr. E. Naylor suggests adding: "It is the intent of this Association that each road will keep up its own repairs and will not offer in interchange any cars not safe to run unless damaged while in transit to or on the interchange track."

Reason: Many railroads are taking advantage of Rule 2 to relieve their repair tracks, throwing the burden of switching and repairs on the receiving line, which was not the intent of the framers of the rule.

Mr. W. H. Lewis suggests that change be made to read: "Owners of cars are responsible for all repairs to their cars, or defects existing, except as named in these rules. All foreign lines repairing such defects are entitled to payment for same, as prescribed in these rules."

Reason: The wording now makes the owner responsible for ordinary wear and tear of their own cars, but there are a good many places in the rules bracketed enclosing owner's defects. Why mention owner's defects? We do not have to issue defect cards for them, and if the change were made it would simplify the code and nothing could be billed for that was in the book, but must be repaired by the handling line at their own expense, or carded if delivered.

RECOMMENDATION: The first proposed change is not concurred in, for the reason that it is covered by Rule No. 1.

The suggestion of Mr. Lewis is not concurred in, for the reason that there will be less misunderstanding by defining the owner's responsibility as well as the handling company's responsibility.

RULE 1.

The Chief Interchange Inspectors' and Car Foremen's Assn. of America, the Chicago Car Interchange Bureau, Car Foremen's Assn. of Chicago suggest omitting the word "running."

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Reason: The word "running" is misunderstood by car foremen. By omitting the word the rule will be made plainer and will create a tendency to make more extensive repairs to foreign cars of owner's defects, thereby keeping the car in more serviceable condition.

The New England Railroad Club suggests permitting handling line to repack all boxes within stated periods, date of last packing to be stenciled on trucks or other suitable location, billing car owner for oil and waste thus used.

Reason: Provisions in this rule are evasive and result in no improvement in the care and attention given to lubrication.

The Chief Interchange Inspectors' and Car Foremen's Assn. and Missabe Ry. Club suggest adding a second paragraph:

"Oil boxes not found repacked within twelve months may be repacked and charged to the car owners, car to be properly stenciled at a convenient location."

Reason: Many car owners neglect to take care of the packing in their cars, and as a result cars run hot and journals are cut. Experience proves that oil boxes should be repacked at least once every twelve months.

RECOMMENDATION: It is recommended that the rule read as follows:

"Each railway company must give to foreign cars, while on its line, the same care as to inspection, oiling, packing, adjusting brakes and repairs as it gives to its own cars."

Reason: The word "running" is omitted for the reason that it was not understood generally because the committee had in mind when introducing the term "running repairs" in the rule that it would include all necessary repairs to obtain a serviceable car, and it is felt that this thought is better covered by the proposed rewording of the rule.

The suggestion to the effect that the date of last packing should be stenciled on trucks or other suitable location and car owner billed for oil and waste is not approved for the reason that it considers that the repacking of boxes should be dependent on the condition of the packing rather than dependent on the stenciled date of last repacking. Further, the rules have held the handling company responsible for this condition, and it is desirable that this principle be continued. It is a charge that can in no way be checked by the car owner.

Rule 2.

The C. I. I. and C. I. Association, the Missabe Ry. Club, Chicago Car Interchange Bureau and Car Foremen's Assn., Chicago, suggest that in second paragraph, after the word "line" in fifth line, add, "also foreign cars originating with them where offered at originating point."

Reason: The present rules permit the receiving line to technically return foreign cars which are offered them at the originating point that

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have been away from their line only a short time. This change would compel the receiving line to accept such cars in the same general condition as when delivered, and will save delay to foreign cars that are routing home.

Third paragraph: Omit the word "tank" in the first line.

Reason: It is just as dangerous to handle cars containing inflammable material in house cars as it is in tank cars.

The Chicago Car Interchange Bureau suggests that in second to last paragraph add the words, "properly side-carded with a bad order transfer, return when empty card, showing the defects for which the car was transferred. New card as follows:

.....**RAILROAD.**

BAD ORDER TRANSFER.

Send to.....**R. R. Transfer track and**

Send to.....**R. R. when empty for repairs**

Account of following defects .....

.....

Car No.....**Initial** .....

Date.....**191**...

Signed .....

Car Inspector.

Reason: The present practice in handling cars that are being transferred is to return the car to the delivering line without any information showing in what condition the car was received, and the reason for its transfer. This results in many cases in cars being returned to the line making the transfer, because the car inspector has no information as to how car was delivered, especially on cars transferred on account of owner's defects, also on cars destined to local industries and are returned when empty to the delivering line in the same condition. The adoption of this suggestion will result in many cars being accepted back by the delivering line that are now being returned on account of inspectors having no knowledge as to when and with what defects the car was delivered.

RECOMMENDATION: The first suggestion is not approved, for the reason that inspectors have no information in connection with the rights of a foreign car on the line of their road.

Your committee would recommend a change in the rule regarding leaking tank cars, as follows:

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"Cars containing inflammable liquid which is leaking must be repaired or transferred without any unnecessary movement, or at nearest available point,"

for the reason that inflammable shipments are made in other cars than tank cars, and under such conditions the car is just as dangerous as leaking tank cars and should be provided for.

RECOMMENDATION: The suggestion of the Chicago Car Interchange Bureau regarding the bad order transfer card is approved, for the reasons given by that Bureau.

Mr. C. E. Fuller suggests changing Section (e), paragraph 4, to read:

"When the lading is transferred by the receiving line, the car, when empty, must be returned to, and must be accepted by, the delivering line."

Reason: To remove misunderstanding of some roads that think it optional with them whether they shall or shall not receive cars which have been transferred.

RECOMMENDATION: Your committee would suggest that the fourth paragraph of Section (e) be changed to read:

"When load is transferred by receiving line, the car, when empty, may be returned to the delivering line properly side-carded with a bad order transfer, return when empty card, showing the defects for which the car was transferred, in which case it must be accepted" (see page 4 for card), for the reasons given by Mr. Fuller.

The St. Louis Ry. Club recommends the first two suggestions.

Central Ry. Club: Omit from first paragraph, third line, the words "offered in" and add to the word "interchange" the letter "d."

Reason: The receiving line being judge of cardable defects, cars should be carded at the time of interchange and not before.

Paragraph (c), page 4. Insert in brackets on margin the words: "Initial road responsible."

Reason: To induce initial road to educate shipper as to how the commodities should be loaded; also as to the necessity for doorway protection in accordance with the Loading Rules.

Mr. S. G. Thomson and Mr. R. E. Smith suggest changing the word "should" in paragraph (a) to "must."

Reason: To avoid the possibility of any misunderstanding.

Mr. R. E. Smith suggests changing the word "shall" in paragraph B to "must."

Reason: To make the rule more imperative.

Add new paragraph (f), as follows: "Loaded cars must not be offered or accepted in intermediate switching movement unless in safe and serviceable condition."

Reason: To relieve the switching road of the possible necessity for

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making repairs to cars only handled by it in intermediate switching movement.

The suggestion of the Central Ry. Club regarding paragraph (c), page 4, is concurred in by your committee in so far as it applies to inside door protection on closed cars, but inasmuch as the change is one in reference to which the Association has no authority to legislate and as the transfer rule is an A. R. A. rule, the question has been referred to that Association for a ruling.

Regarding the suggestion of Mr. Thomson and Mr. Smith, the word "should" was adopted under instructions from the Executive Committee. Your committee concurs in the recommendation.

The suggestion of Mr. Smith that the word "shall" be changed to "must" in paragraph (f) is approved for the sake of uniformity and because the word is more generally understood by the car inspector.

The suggestion of Mr. Smith in regard to loaded cars in intermediate switching movement is not approved, for the reason that a switching road which handles a car on a revenue basis should receive no different treatment than a railroad.

Mr. F. W. Dickinson suggests adding to first paragraph the words, "with either defect cards or home route cards."

Reason: In many cases intermediate roads refuse to handle cars under home route cards unless also protected by defect cards. As road requesting home route card should be responsible to the owner for any delivering company defects on the car when it is received home, and as the road sending the car home is protected by its ability to demand a joint inspection, the intermediate road should be protected as in the case of trucks shipped home.

RECOMMENDATION: The suggestion is not approved, as your committee will make a recommendation under Rules 120 and 121 which will render this unnecessary.

Mr. W. J. Robider suggests inserting: "In case of dispute between the receiving and delivering line that a disinterested inspector or joint inspector be called upon to make the decision."

Reason: To facilitate movement of cars by not having so many set back by minor defects.

RECOMMENDATION: Not concurred in, for the reason that where there is a joint inspector we are guided by him, and where we do not have a joint inspector the receiving line inspector is the sole judge.

Mr. E. Naylor suggests adding: "Before again returning the car to receiving line, all repairs enumerated on return card must be made, whether penalty defects or not."

Reason: A car legitimately refused under Rule 2 on account of penalty defects, is returned to the receiving line with only the penalty defect

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repaired, making it compulsory on the receiving line, in some instances, to carry the car to their repair track.

RECOMMENDATION: Not approved. While it is desirable for every freight car, loaded or empty, in interchange to be in condition for loading, we can not as yet bring this condition about. The delivering line is penalized to-day for the cost of transfer of a car in addition to the cost of the return movement whenever offered in interchange if it is not in condition to go forward. See A. R. A. Rule 15.

Mr. W. J. Stoll suggests inserting the following under second paragraph: "Empty cars on return movement should be returned in as good a general condition as when delivered."

Reason: Some roads are delivering 90 per cent loads, while others deliver from 80 to 85 per cent empties, the burden being placed on the road which delivers the empties, they being compelled to repair both loaded and empty cars.

RECOMMENDATION: This suggestion, as well as the several preceding ones having in view the condition that every car offered in interchange, whether loaded or empty, must be a serviceable car, is not approved. While this condition is an ideal one and very desirable, your committee can not devise a method to-day under which it can be secured.

Also, exception (b), add to second paragraph: "The delivering line to assume the expense in connection."

Reason: The responsibility is not now defined, and as the receiving line is practically forced to take care of shipment, it would be only just that it be protected against liability thus incurred.

RECOMMENDATION: This is not concurred in, for the following reasons: The preface to paragraph (b) is as follows: "Loaded cars offered in interchange must be accepted with the following exceptions." The first section of paragraph (b) refers to the non-safe condition of a tank car with an inflammable load, while the second paragraph indicates that a tank car in such a condition must be repaired or transferred without any unnecessary movement. It was not the intention or purpose of this paragraph to take away from the delivering line the responsibility for the cost of such transfer.

Also, exception (c). Eliminate.

Reason: A. R. A. Rule 15 automatically takes care of improperly loaded cars.

RECOMMENDATION: Not concurred in, for the reason that this paragraph is necessary for a clear understanding of the rules.

Mr. J. E. Keegan suggests the omission of the words, "at any point on their lines," in the next to the last paragraph, and the addition of the words, "Car service and," in the last line preceding the words, "these rules."

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Reason: To avoid interfering with Car Service Rules.

RECOMMENDATION: Not concurred in, as your committee does not understand that there is any conflict with Car Service Rules.

Mr. F. H. Clark suggests omission of words, "when offered," in second paragraph, fourth line, page 3.

Reason: They are superfluous.

RECOMMENDATION: Your committee does not believe this of sufficient importance to change the rule.

Mr. W. H. Lewis suggests a new paragraph to Section (a), as follows: "Cars of less than 50,000 pounds capacity should be refused, as they are too light for use in heavy tonnage trains, endangering the movement of same."

RECOMMENDATION: Not approved, for the reason that your committee believes it is outside the province of this Association to legislate in reference to the rejection of cars in interchange based on capacity; that the acceptance of a car in interchange should be governed entirely by its condition and construction.

The Western Car Foremen's Assn. suggests that return card referred to in this rule and shown on page 98 be revised to place date on the card.

RECOMMENDATION: This suggestion is approved.

The C. I. I. and C. F. Assn. suggests changing first paragraph to read: "Cars having defects for which delivering company is responsible must be properly carded when interchanged."

Reason: It is the general practice to inspect cars in the receiving line yard, and this is good practice for the reason the receiving line is the judge.

RECOMMENDATION: Not approved, for the reasons given above under the Central Ry. Club.

The C. I. I. and C. I. Assn. and Missabe Ry. Club suggest, under paragraph (e), that the official clearances be published, because it is not feasible to place in the hands of inspectors where they are readily available, publications in which the official clearances are now published.

RECOMMENDATION: Referred to the Committee on Loading Rules.

Mr. J. Dickson suggests making rule clear as to transferring or shifting load. Make it not chargeable to delivering company when load is unmoved on account of car being in bad order due to owner's defects.

Reason: To prevent charging delivering company and car owner with cost of moving the load.

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RECOMMENDATION: Not concurred in. A car should be properly inspected before loading. If the delivering line did not protect itself at interchange and when it placed the car for loading it should not throw the burden of its negligence on the receiving line.

Section (c). Your committee would recommend that this section be changed to read:

"Cars improperly loaded (not complying with the Loading Rules) when transfer or rearrangement of lading is necessary."

Reason: To indicate that this paragraph refers to the provisions of the Loading Rules only.

RULE 3.

RECOMMENDATION: Your committee would recommend a new Rule 3, as follows:

(a) Cars will not be accepted in interchange unless equipped with air brakes having 1¼ in. air-brake pipe and angle cocks; also quick-action triple valve, pressure-retaining valve and an efficient hand brake.

(b) Cars will not be accepted in interchange equipped with stem or spindle coupler attachments.

(c) Cars built after October 1, 1914, with journals or journal bearings other than M. C. B. Standard, will not be accepted in interchange.

(d) Cars built after October 1, 1914, will not be accepted in interchange unless equipped with either the No. 1 or the No. 2 M. C. B. Standard brake beams and so marked plainly on strut by stamping or casting on.

(e) After January 1, 1915, tank cars (empty or loaded) will not be accepted in interchange unless the safety valves are stenciled to show adjusted, etc., within the time limit required by paragraphs 5, 6 and 7 of the M. C. B. Specifications for Tank Cars.

(f) After July 1, 1916, cars will not be accepted in interchange unless stenciled showing month and year originally built. Cars built prior to 1895 may be stenciled "Built prior to 1895."

(g) After October 1, 1915, no car built for the purpose of carrying products which require the use of salt with ice for the refrigeration of such products will be accepted in interchange unless equipped with suitable device for retaining the brine between icing stations.

(h) After October 1, 1916, cars will not be accepted in interchange unless equipped with all-metal brake beams.

(i) After October 1, 1916, cars will not be accepted in interchange equipped with continuous draft rods.

(j) After October 1, 1916, no car will be received in interchange unless the body of the car is marked as provided in Rule 86, i. e., either capacity, maximum weight, and on tank cars Limit Weight No. 1 or Limit Weight No. 2.

(k) If the car has air-signal or train-line steam pipes, the hose,

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pipes and couplings are at owner's risk, unless the car is stenciled that it is so equipped.

(1) When two or more cars chained together, or any car which requires switch chains to handle them, are delivered at an interchange point, the receiving road shall deliver to the delivering road at the time an equivalent number of switch chains of the same size as the chains so used on the cars delivered, or, in lieu thereof, furnish a defect card for such chains.

It is felt that it would be much better to concentrate these special requirements regarding the interchange of cars under one head or rule than to have them scattered all through the book.

Rule 4.

Your committee would recommend the consolidation of Rules 3 and 4 as Rule 4, because the items cover requirements as to the use of the repair card.

Mr. R. E. Smith suggests eliminating the words, "As per Rule 14," and add, "with at least four tacks, preferably on the outside face of intermediate sill between cross-tie timbers on wooden cars, and on steel cars to cardboard located either on cross-tie under car or on inside of sill at the end of car."

Reason: So that rule will be complete in itself, without reference to any other rule.

RECOMMENDATION: Not concurred in. It would be impossible to make every rule complete in itself without reference to other rules except by nearly doubling the rules.

Mr. F. W. Dickinson suggests adding to last paragraph: "nor when car is moving under home route cards."

Reason: See Rule 2.

RECOMMENDATION: The suggestion is not approved; see recommendation in Rule 120.

Mr. W. J. Stoll suggests adding to this rule suggestion made in Circular 18.

The C. I. I. and C. F. Assn. suggests adding to the second paragraph: "At outlying points where joint inspection is not in effect, the matter will be left to the judgment of the receiving line. At the larger points where chief interchange inspectors are employed, the decision will be made by the chief interchange inspector as a representative of the car owner and the receiving line."

RECOMMENDATION: Suggestion approved, as it provides a way to define what constitutes slight repairs.

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Your committee would recommend that the rule be changed to read:

"Defect cards shall not be required for missing material in fair usage from cars offered in interchange. Neither shall they be required of the delivering company for improper repairs that were not made by it, with the exception of the cases provided for in Rules 35, 56, 57 and 70."

Reason: The words "fair usage" have been added to make the wording of the rule conform to practice and to make the rule equitable to the owner.

Reference to Rules 46 and 58 has been omitted because it is felt that the material can not be missing under fair usage.

Central Ry. Club and Mr. J. E. Keegan suggest changing reference in fourth line to read "58" instead of "57," also in last line omit reference to Rules 35, 58 and 66 and add Rules 56 and 57.

Reason: To conform to decisions of Arbitration Committee.

RECOMMENDATION: See suggestion above.

Mr. R. E. Smith suggests eliminating in the third line the words, "as provided for in Rules 46 and 58," and substitute therefore the rules in their entirety.

Reason: To make the rule self-contained, so that no other rules will have to be referred to.

RECOMMENDATION: Not approved. See recommendation under Rule 3.

Mr. C. E. Fuller suggests that rule be changed to require defect cards for material missing from cars offered in interchange, when due to unfair usage.

Reason: To remove misunderstanding which appears to exist concerning the responsibility for material missing from cars due to accident.

RECOMMENDATION: Approved. See suggested change above.

Mr. F. W. Dickinson suggests adding, "nor for any defect card moving under home route card."

Reason: See Rule 2.

RECOMMENDATION: Rejected. See revision of rule above.

Mr. W. J. Robider suggests the following: "Defect cards shall not be required for material missing from cars offered in interchange, except brake rigging torn off in interchange."

Reason: Frequently cars interchanged will have brake rigging torn off after leaving delivering line's yard, and in this case the receiving line having to receive the car has to apply the missing material and is not allowed to bill for same according to the present rule.

RECOMMENDATION: It is not approved, because it is against the law to accept a car with a penalty defect.

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The New England R. R. Club suggests omission of reference to Rule 58.

Reason: The Association should not advocate the acceptance on defect cards or otherwise of cars in interchange with missing air-brake equipment.

RECOMMENDATION: Yes. See revised rule above.

The St. Louis Ry. Club suggests that all rules pertaining to wrong repairs be embodied in one rule in various paragraphs.

Reason: It makes a more ready reference for those who are not thoroughly familiar with the rules.

RECOMMENDATION: Not approved. The committee does not feel that it would add anything to the convenience of the rules.

Rule 5.

Mr. R. E. Smith suggests cutting out the words, "as provided for in Rule 14," and add Rule 14 in its entirety; also that the words "brake heads" and "brake shoes" be added.

Reason: To make the rule self-contained, so that no other rules will have to be referred to; also, that reference can be made on repair cards for brake heads and shoes the same as for journal boxes and contained parts.

RECOMMENDATION: The first suggestion is not approved, for the reasons given above.

The latter suggestion in reference to brake heads and brake shoes is not approved, for the reason that there is no limit in the M. C. B. rules to the number of brake heads and shoes applicable to a car during one trip.

Rule 7.

Mr. R. E. Smith suggests cutting out the words, "as per Rule 14."

Reason: These words are unnecessary, as Rule 5 in its modified form gives full information.

RECOMMENDATION: Not approved, for the reasons given above.

Your committee would suggest adding to the last paragraph, "in which case the cards must be entered in the billing statement in the first four columns, with the notation 'No bill' in the fifth column for reference," in order to furnish a permanent record of "No bill" repair cards on the bills and to avoid unnecessary and expensive tracing. This will also serve more accurately to fix the responsibility for wrong repairs and thus safeguard the owner.

Rule 9.

Central Ry. Club suggests, under M. C. B. couplers, omit the word "stem" in bracket after first paragraph.

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Reason: Cars so equipped are not acceptable after October 1, 1914.

RECOMMENDATION: Approved, for the reason that the Association has legislated against the continuance in service of couplers with stem attachments, and has provided a date (October 1, 1914) after which they will be no longer received in interchange. There being no request for an extension of this date and it being thought there are very few couplers of this type in service, the committee feels that no further extension is necessary and that the provision for the application of stem couplers should be omitted from the rules.

In fourth bracket, first line, change the words "make or name" to "M. C. B. beam No. 1 or No. 2."

Reason: An arbitrary price should be set, based upon M. C. B. specifications, both No. 1 and No. 2.

Your committee would suggest the following change:

"If M. C. B. Standard brake beam is applied, state whether No. 1 or No. 2, in addition to name of beam."

In first paragraph, page 7, first line, change to read: "When triple valve, cylinder or centrifugal dirt collector is cleaned."

Rule 111 already provides a price for cleaning, draining and stenciling dirt collector in branch pipe. In order to check charges on this account the same should be covered on billing repair card. The second paragraph of Rule 9 should, therefore, be changed to include this information on the billing repair card.

It is further recommended that the standard stenciling for brake cylinders be enlarged to include all cleaning and stenciling of centrifugal dirt collectors by adding a line with the initials "D. C." for dirt collectors; also a line for the date cleaned, shop mark and name of road doing the work. This question is submitted to the Committee on Revision of Standards and Recommended Practice for consideration.

Reason: This information is necessary.

Mr. S. G. Thomson suggests that the words "temporary M. C. B. Standard" be inserted to the right of first bracket following the word "where."

Reason: To insure proper information on billing repair card.

RECOMMENDATION: Not approved, for the reason that the rule is thoroughly understood by the inspectors, and, furthermore, the additional information would tend to overburden the billing repair card.

Also, omit the word "stem" in first bracket.

Reason: To comply with Rule 18, effective October 1, 1914.

Mr. R. E. Smith suggests eliminating the word "stem" in the last sentence in first bracket.

Reason: Not permissible to use stems after October 1, 1914.

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Third bracket, journal bearings. Eliminate the number "14" and substitute "5."

Fifth bracket, brake shoes. Add brake heads and shoes, numbered as per Rule 5.

Add new paragraph, as follows:

"Lumber. State finished sizes."

Reason: Some roads are not showing any sizes of lumber used, and simply billing for board feet, which can not be checked on the bill.

Bolts. Size of all bolts and forgings used.

Reason: Can not properly check repair bills without this information being given.

Change second paragraph, page 7, to read as follows: "If necessary to remove load to make repairs, it must be stated that the load has been removed and replaced."

Reason: The bill clerk needs the information.

RECOMMENDATION: The suggestion of Mr. Smith regarding stem couplers has already been approved. See previous note.

The elimination of the No. 14 and substitution of No. 5 is not approved for reasons given previously.

The addition of brake shoes and heads is not approved, for reasons already given.

The addition of new paragraph covering lumber is not approved, because the owner knows the size of timbers which go into car construction and can readily check his bills.

To give the size of all bolts and forgings used, the committee believes, would be impracticable.

In regard to the proposed change in the second paragraph, page 7, your committee believes the present rule covers the question very clearly.

The Pittsburgh Ry. Club and Mr. J. E. Keegan suggest omitting the word "stem" in bracket after first paragraph under couplers.

Reason: Cars so equipped are not acceptable after October 1, 1914.

In first paragraph, page 7, omit word "or" in first line and insert comma, and after the word "cylinder" insert the words "or centrifugal dirt collector."

Reason: To justify bill it is necessary to show this information.

The C. I. I. and C. F. Assn. suggests changing the words "make or name" in fourth bracket, first line, to "M. C. B. No. 1 or No. 2."

The three recommendations above have already been taken care of by the committee.

The Pittsburgh Ry. Club suggests that, under the head of metal brake beams, change the cause of removal from "renewal" to "removal," to have it correspond with other sections of rules where reference is made to parts "removed" instead of "renewed."

RECOMMENDATION: Approved for the reason above given.

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RULE 10.

Central Ry. Club and Mr. J. E. Keegan suggest changing second paragraph to read: "In all cases of forged or rolled steel wheels the actual thickness of tread before and after turning off must be shown, measured from base line of tread to the condemning limit of tread, which is ¼ in. above witness groove, as determined by gage shown on Sheet M. C. B.—C-1 of Recommended Practice; also show actual thickness of tread on other wheels applied. This information must be reported to car owners regardless of whether repairs are chargeable or not.

Reason: To provide accurate information, as based on a new or standard flange contour.

RECOMMENDATION: Not approved. The gage referred to is a shop tool the use of which can not in any way be checked in interchange, and therefore has no place in the interchange rules.

RULE 12.

Mr. R. E. Smith suggests eliminating the words, "as per Rule 14," in the second and third paragraphs.

Reason: The reference is unnecessary.

RECOMMENDATION: Not approved, for reasons already given under other rules.

Your committee would recommend a new paragraph, as follows:

"The joint evidence may be obtained at any point on the home line at which the improper repairs are found, but preferably at the point where the car is received, and only after an actual inspection has been made.

RULE 13.

Mr. R. E. Smith suggests change to read: "Joint evidence card, accompanied by billing repair card covering wrong repairs, when wrong repairs have been corrected, shall be authority for making bill."

Reason: No reason when joint evidence card is obtained for referring it to the road interested with request for defect card, as the joint evidence card should be sufficient authority for rendering bill.

RECOMMENDATION: Not concurred in, for the reason that it is necessary for the owner to retain in his file the billing repair card on which improper repairs were originally made. This is a requirement of the Interstate Commerce Commission.

Mr. F. W. Dickinson suggests adding: "If no billing repair card can be located, the joint evidence shall be sent for investigation to each road handling the car during the trip on which the wrong repairs were made, and the road which made the wrong repairs shall furnish defect card to cover the cost of making repairs standard."

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Reason: Cars come home with wrong repairs existing for which neither repair card nor defect card are furnished, some roads taking the position that under the rules they can not be held for wrong repairs unless they furnish a repair card. This leaves owner without protection.

RECOMMENDATION: Not approved, for the reason that at one time it was the general practice as between railroads to request tracings for cars when bills were questioned. This condition became so burdensome and so overloaded the car-record offices that the majority of railroads feel that it is impracticable to trace cars for this purpose.

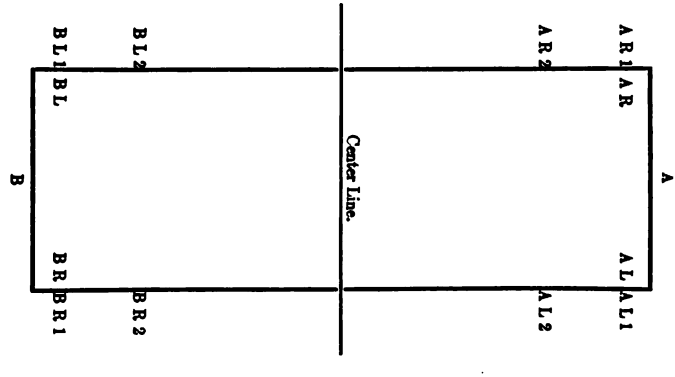
The spirit of the rules is that whenever repairs are made the billing repair card should be made for such repairs either for settlement or to be marked "No bill," the same to be forwarded to the owner under every and all conditions. Your committee can only call the attention of the members of the Association to this fact.

Rule 14.

The C. I. I. and C. F. Assn., Chicago Car Interchange Bureau, Central Ry. Club and Car Foremen's Assn. of Chicago suggest that second paragraph be changed to read:

"Facing the B end of car, in their order on the right side of car, the journal boxes and contained parts shall be known as B R 1, B R 2 and B L 1 and B L 2. Facing the A end of car the journal boxes and contained parts shall be known as A R 1, A R 2 and A L 1 and A L 2; the same to apply to defects upon the body of the car. The center of the car to be the dividing line."

Also, that a diagram be inserted in the rules showing the various locations on body as well as trucks, as follows:



RECOMMENDATION: Not concurred in, for the reason that the present designations as provided for in Rule 14 have been in use for a

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sufficient length of time so that the inspectors are thoroughly acquainted with them.

It is now the practice under Rule 7 to designate the body repairs in reference to the end of the car on which the repairs were made by the "A" and "B" end, using the center line of the car as the dividing line. It is thought it would unnecessarily complicate the bills and result in a useless and unnecessary correspondence to more definitely locate body defects as provided for.

Mr. R. E. Smith suggests that rule be made vacant on account of being consolidated with Rule No. 5.

Not approved; former suggestion regarding Rule 5 not concurred in.

The Pittsburgh Ry. Club and Mr. J. E. Keegan suggest new paragraph reading: "Cars equipped with two brake cylinders must be stenciled 'A' and 'B' ends."

Reason: To enable repair cards being properly made out.

RECOMMENDATION: Not approved. The rules never intended to burden the owner with this requirement as to defining a practice for such stenciling. To enforce this stenciling it will be necessary to make it an interchange requirement. This is an owner's responsibility and there is no objection to his stenciling his cars if he so wishes, but if he does not stencil the car he can not expect the information on his repair card.

Mr. W. H. Lewis suggests adding to this rule: "The right and left side of car body should be similarly designated."

Reason: The rule applies to trucks and should apply to body as well.

The suggestion of Mr. Lewis is not approved, for reasons given above.

Rule 15.

Central Ry. Club, J. E. Keegan:

Change to read: "Duplicate defect, billing repair or joint evidence cards must be furnished promptly on request for lost or illegible cards."

Reason: To improve the wording of the rule.

The above suggestion meets with the approval of the committee for the reason given.

Rule 17.

Central Ry. Club, Pittsburgh Ry. Club and Mr. J. E. Keegan suggest changing third paragraph to read:

"Pressed steel, cast steel, malleable and gray iron M. C. B. Standards may be substituted for each other, charges to be on basis of material applied and the credits on basis of material removed."

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Reason: To encourage use of all M. C. B. Standards and to remove penalty that now prevails in old rule when standards other than cast iron are used.

The C. I. I. and C. F. Assn. and Missabe Ry. Club suggest changing first line in third paragraph to read: "Malleable iron or steel M. C. B. Standards," etc.

The St. Louis Ry. Club suggests changing third paragraph to read: "Malleable iron M. C. B. Standards may be substituted for gray iron M. C. B. Standards, and gray iron M. C. B. Standards may be substituted for malleable iron M. C. B. Standards, but in such cases the debits and credits must be for such material as has been removed and applied. Repair cards must state kind of material applied and removed."

Mr. F. H. Clark suggests change in third paragraph, page 17, as follows:

"Malleable iron and cast steel M. C. B. Standards may be substituted for gray iron M. C. B. Standards."

Reason: The use of cast steel is becoming a general practice.

The New England R. R. Club suggests omitting in third paragraph the words, "but the net cost to the car owner in such cases must be no greater than if the original kind and weight of material had been applied," and in place substitute, "debits and credits to be for actual material applied and removed.

Reason: Malleable iron is being used to-day and railroads should not be penalized for not carrying cast-iron parts for use on foreign cars.

Change fourth paragraph to read:

"When necessary to renew brake beams on cars of less than 80,000 lb. capacity or under 132,000 lb. maximum weight, any metal brake beam meeting M C. B. specification No. 1 must be used, and on cars of 80,000 lb. capacity or over 132,000 lb. maximum weight, any metal brake beam meeting M. C. B. specification No. 2 must be used. If hangers or other parts are altered, defect card shall be furnished for the detail altered."

Reason: M. C. B. specifications designate these two classes of beams and this is all that is sufficient for the braking power of these classes of equipment. Paying for hangers or other parts should be sufficient penalty.

Add new paragraph following fourth paragraph:

"After October 1, 1915, metal beams not conforming to M. C. B. specifications for No. 1 or No. 2 beam and so marked, must not be used in repairs to foreign cars."

Reason: To enforce use of M. C. B. specifications for standard beams Nos. 1 and 2 and marking of same on brake-beam strut.

Mr. J. E. Keegan approves the above suggestion.

Mr. J. E. Keegan suggests change to read:

"When necessary to renew brake beams, any metal brake beam meeting M. C. B. specifications may be used, provided that beam applied is as strong

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as the beam standard to the car. If hangers or other parts are altered, defect cards shall be furnished for the detail altered."

Reason: As specification beams have been standardized, a road should not be penalized for a beam of sufficient strength. Paying for hanger or other parts should be sufficient penalty.

RECOMMENDATION: In reference to the changes suggested for this rule which relate principally to the substitution of M. C. B. Standards for material on the car and the application of M. C. B. metal brake beams, your committee approves of none of these recommendations as rendered, but would propose a revision of the rule as outlined below:

(a) In repairing foreign cars: Defective non-M. C. B. Standards may be replaced with M. C. B. Standards (which must comply with M. C. B. specifications), provided such substitution does not impair the strength of car. Any increased cost resulting from and any expense of alteration necessary for the application of such M. C. B. Standards shall be charged to the party responsible for the repairs. Any expense of alteration necessary for the application of such M. C. B. Standards to be charged to party responsible for the repairs. Scrap credits to be allowed for undamaged parts thus removed.

(b) Malleable iron, wrought iron or steel M. C. B. Standards may be substituted for each other or for gray iron M. C. B. Standards. Gray iron M. C. B. Standards applied in lieu of malleable iron, wrought iron or steel M. C. B. Standards shall be considered as wrong repairs.

(c) In replacing M. C. B. Standard couplers or M. C. B. Temporary Standard couplers, the dimensions of shank and butt of M. C. B. couplers standard to the car must be maintained.

(d) If the car owner elects on account of improper repairs to remove M. C. B. Standard or M. C. B. Temporary Standard coupler in good condition, secondhand credit should be allowed, and charge be confined to secondhand coupler applied.

(e) When necessary to renew brake beam, any metal brake beam meeting M. C. B. specifications may be used, provided that the beam applied is at least as strong as the beam standard to the car.

(f) Billing repair card to specify kind of material applied and removed, and bill rendered in accordance therewith.

(g) Cast-iron brake shoes may be replaced with brake shoes having reinforced back and the increased cost charged to party responsible for the repairs.

(h) White pine, yellow pine, fir or cypress may be used when repairing siding, when of equal grade or quality to the material standard to the car. Fir, oak or southern pine may be substituted for each other in renewing or splicing of longitudinal sills.

Reason: To discourage the use of non-M. C. B. Standard material and facilitate freight-car repairs.

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The Missabe Ry. Club suggests adding the following:

"Brake staffs, sill steps, uncoupling levers and grabirons must not be welded."

The above suggestion meets with the approval of the committee.

"Brake staffs, sill steps, uncoupling levers and grabirons must not be straightened cold."

Reason: The welding or straightening cold is liable to leave them in a defective or weakened condition.

RECOMMENDATION: Not approved, for the reason that if the metal is the kind of metal it should be it will be test iron, and can be easily bended for the amount of bending that has to be done to it.

RULE 18.

The Central Ry. Club, Pittsburgh Ry. Club, Mr. J. E. Keegan, the C. I. I. and C. F. Assn. and the Missabe Ry. Club suggest eliminating second paragraph on account of stem attachments not being acceptable in interchange. Change third paragraph to read:

"Cars having couplers with stem or spindle attachments or American continuous draft rods will not be accepted in interchange unless en route home."

Reason: To allow cars to move home to owners.

Mr. S. G. Thomson suggests eliminating the words, "After October 1, 1914," and add "unless en route home."

Reason: To permit home movement to car owner.

RECOMMENDATION: Not approved, for the reason that if a car is equipped with stem or spindle attachment the handling company should be privileged to replace the stem or spindle attachment with a pocket attachment at the owner's expense.

In so far as the American continuous draft rod is concerned, will recommend an extension of time.

Mr. R. E. Smith suggests cutting out first paragraph, as it is obsolete. Also, that third paragraph be made first paragraph.

RECOMMENDATION: Not approved, for the reason that rewritten Rule 17 covers the matter.

Mr. O. S. Jackson and Mr. A. C. Deverell suggest amending third paragraph of rule to read "October 1, 1916."

Reason: Time allotted too short and the additional two years will be only a reasonable length of time to get cars home and make necessary changes.

RECOMMENDATION: It is recommended that the time be extended until October 1, 1916.

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It is called to the attention of car owners who have cars on their line with American continuous draft rods that, while the extension of time is recommended, they should not abate their efforts toward getting such draft rods out of service. It is also called to the attention of members of the Association that there are other draft carrier construction on the same principle as the American continuous draft and that these are also covered by the rule.

Mr. W. J. Stoll suggests embodying second paragraph in first paragraph, making rule read:

"Couplers of the vertical plane type other than M. C. B. Standard, when replaced with M. C. B. Satndard, and couplers with stem attachments when replaced with pocket attachments, the expense of alteration thus necessitated shall be charged to owners."

After October 1, 1914, some provision should be made for the protection of roads having foreign cars with stem couplers in their possession.

Third paragraph. Would strongly oppose an extension of time for the replacement of American continuous rods. However, under the present provisions of the rules it will be necessary to reconcile this rule with the provisions of Rule 2, forbidding the return of loaded cars, and also Rule 35, second paragraph, which makes the delivering company responsible.

RECOMMENDATION: Not approved. The committee has recommended the abolition of the first paragraph. In reference to the second paragraph, such roads need no protection, inasmuch as they may replace a stem connection with pocket coupler at the expense of the owner of the car.

In regard to the third paragraph, your committee does not concur with the recommendation, for the reasons given above.

Rule 19.

Central Ry. Club: In the last line between the words "malleable or" insert the word "filled."

Reason: Most roads are using solid journal bearings and are receiving, when repairs are necessary, filled journal bearings. These are an inferior article and detrimental to the service of the car.

The C. I. I. and C. F. Assn. and the Missabe Ry. Club suggest changing last line to read: "Malleable, filled or steel-back journal bearings."

Reason. To permit the use of filled bearings.

RECOMMENDATION: Your committee does not feel that the railroads in general are prepared to make this radical change, as many of them consider a filled bearing as good practice. The suggestion is not approved.

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Mr. R. E. Smith suggests changing the word "shall" in second line to "must."

Reason: To make rule more imperative.

RECOMMENDATION: The suggestion above is approved for the reason given.

Add to the rule: "Cast-iron brake wheels."

RECOMMENDATION: The suggestion is approved.

The Indian Refining Co. suggests adding: "Coupler yokes without gibs and coupler-butt shims."

Reason: The use of coupler yokes without gibs is one of the causes of couplers pulling out. The shimming of coupler butts to bring them up to fit the yoke should be prohibited, because it is impossible to do a good job and does not last any length of time.

RECOMMENDATION: These suggestions are not approved. The committee thinks both recommendations are desirable, but their application should be delayed.

The New England R. R. Club suggests omitting the word "foreign" and change "shall" to "must."

Reason: These materials should not be applied by owner to his own equipment.

RECOMMENDATION: Not approved. The owning line may use any construction it desires on its own cars for service on its own line where such construction does not interfere with the requirements of these rules.

RULE 20.

Central Ry. Club, Pittsburgh Ry. Club and Mr. J. E. Keegan suggest changing, in third line, first paragraph, the word "may" to "must," and adding the following to the paragraph: "When construction of car and trucks precludes the common methods of adjusting coupler heights, the application of metal shims between journal boxes and arch bars will be permissible."

Reason: To provide for adjustment of coupler heights on cars that can not otherwise be taken care of.

RECOMMENDATION: Suggestion of Pittsburgh Club approved, for the reason given.

The New England R. R. Club suggests changing the word "may," in last line of first paragraph, to "must."

Reason: To make more imperative the maintenance of couplers to standard heights.

RECOMMENDATION: Suggestion approved, for the reason given.

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RULE 21.

The Central Ry. Club and Mr. J. E. Keegan suggest adding the following clause:

"Also for applying temporary transverse tie rods to cars with sides spread or bulged beyond the clearance limits of the handling line."

Reason: The spreading of sides of cars, due to weak construction, is a condition for which owners are responsible, and the cost of applying temporary tie rods should not be assumed by handling line.

RECOMMENDATION: Your committee approves of the suggestion. When it is necessary to apply transverse tie rods on account of car sides being bulged out, the same should be charged against the owner of the car, because such spreading or bulging is an indication of weak construction.

RULE 23.

Mr. R. E. Smith suggests eliminating this rule, as it is obsolete.

RECOMMENDATION: The suggestion is not approved, because there are wheels under freight cars still running 28 and 36 in. diameter, and the rule is not obsolete.

RULE 25.

Mr. R. E. Smith suggests a new paragraph: "When the date cast on wheels shows that they are more than nine months old at date of application, they are to be considered secondhand wheels."

Reason: To give check on whether or not wheels were new or secondhand.

RECOMMENDATION: Not approved. The committee does not believe the suggestion is consistent with fairness, nor is it consistent with good practice.

RULE 27.

The Missabe Ry. Club suggests adding a paragraph showing pressure which must be used pressing wheels on axles; that a table be prepared showing pressure for each size of cast wheel, forged or rolled-steel wheel.

Reason: An improvement will be made in the rules and car owners will have some redress in case poorly mounted wheels are placed under cars.

RECOMMENDATION: The suggestion is not approved, because it is a shop practice and not possible to check in interchange.

RULE 28.

Mr. R. E. Smith suggests changing this rule to No. 89, which is now vacant, placing it under the general heading, "Improper Repairs," and making notation under Rule 28: "This rule has been given new number 89."

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RECOMMENDATION: Mr. Smith's recommendation in connection with Rule 28 is not wholly concurred in. Your commitee, however, would propose that the rule be made vacant.

The first part of the rule is already covered in Rule 87. Your committee would recommend adding the latter part of the rule to Rule 87 as an additional exception.

The rewording of Rule 87 will be given under that rule.

RULE 29.

RECOMMENDATION: Your committee would recommend that this rule be reworded:

"When secondhand axles are applied the journals must not exceed ⅜ in. over the standard length and the collar must be not less than $\frac{5}{16}$ in. thick. The diameter of the wheel seats or centers must not be less than, or the diameters of the journals must be at least ⅛ in. greater than, the limiting diameters given in Rule 86" — balance of rule as at present.

The reasons for adding these additional limits to the rule are that under present Rules 29 and 85 the car owner may be charged in axle replacements for an axle at its secondhand value, which is practically only scrap, in so far as the thickness of collar and length of journal is concerned. There has been a slight rewording of the rule to render it clear.

Your committee would also propose to the Association that the Wheel and Axle Committee investigate the propriety of maintaining the item of limit of collars on axles at less than ¼ in., having in view the increased car capacities and the safety of this limit for these cars. This information should properly be shown by an additional column in the tabulations in Rule 86.

RULE 31.

Mr. R. E. Smith suggests eliminating the words, "in accordance with Rule 107."

Reason: They are unnecessary.

RECOMMENDATION: The suggestion is approved for the reason given.

RULE 32.

The Car Foremen's Assn., Chicago, suggests omitting the words "of any kind" after the word "damage" in the first line.

Reason: They conflict with the second paragraph of the rule, which requires that defect cards shall not be required for any damage so slight that no repairs are necessary, whereas the words "of any kind" imply that the delivering company is responsible for any kind of damage, regardless of its extent.

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RECOMMENDATION: The suggestion is approved for the reasons given.

RULE 33.

The Central Ry. Club and Pittsburgh Ry. Club suggest inserting new rule as follows:

"On cars equipped with United States Safety Appliances or United States Safety Appliances Standard, and so stenciled, the renewal of or repairs to side and end ladders or ladder treads, side and end handholds, sill steps and brake shaft, unless the brake shaft is bent or broken, due to lading shifting — delivering line responsible.

Reason: Cars equipped as above will not become defective in fair service.

RECOMMENDATION: The suggestion is not approved, but your committee proposes a new rule, as follows:

"The following will not be considered as an owner's responsibility:

"Straightening or replacing ladders, handholds, sill steps or brake shafts."

Reason: It is felt that these details can only be damaged or missing in unfair usage. It is recognized that there are a number of cars running in which the appliances are not applied in accordance with the Federal Act, but to avoid confusion in billing, and as there are only two years yet until all cars will have to meet the requirements, it is thought best to include all cars in the provision.

RULE 35.

Texas & Pacific Ry. suggests extension of time two years for the removal of American continuous draft rods.

Reason: Every effort possible is being put forth to dispense with the use of these rods, but it will require that time to handle equipment through shops and bring it up to the standard required.

RECOMMENDATION: Not approved. See suggestion under new Rule 3.

Central Ry. Club suggests eliminating first paragraph.

Reason: Cars with stem or spindle attachments will not be accepted in interchange.

The Pittsburgh Ry. Club and Mr. J. E. Keegan suggest the above.

RECOMMENDATION: Not approved. See new Rule 3. It is necessary to provide authority for the rejection of cars.

The Central Ry. Club suggests adding paragraph as follows:

"Where it is necessary to use an M. C. B. standard journal bearing on an axle having journal other than M. C. B. standard size, defect card for wrong repairs should not be requested."

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Reason: Companies should not be forced to carry in stock other than M. C. B. sizes.

RECOMMENDATION: Not approved, for the reason that such substitution might interfere with the safe running of the car unless all other parts connected are standard to such journal applied.

Change second paragraph to read:

"Cars equipped with couplers having stem or spindle attachments or American continuous draft rods will not be accepted in interchange unless en route home."

Reason: To allow cars to move home to owners.

The Pittsburgh Ry. Club and Mr. J. E. Keegan suggest the above change.

RECOMMENDATION: Not approved. See suggestion under Rule 120.

In third paragraph, preceding the word "cars" in the first line, insert the word "foreign" and add to paragraph "unless en route home."

Reason: To allow owners to care for the stenciling of their own cars.

Eliminate last paragraph.

Reason: Account of being covered by Rule 66.

RECOMMENDATION: Not approved. See revised Rule 120. Interchange inspectors do not know whether car is routed home or not.

Mr. S. G. Thomson and Mr. J. E. Keegan suggest eliminating paragraph five.

Reason: Covered by Rule 66.

The Pittsburgh Ry. Club suggests the above change.

RECOMMENDATION: Not approved. This paragraph can not be eliminated, as in such case there would be no location of responsibility for a car in this condition. The requirement should be removed from Rule 66, also from Rule 35. See new Rule 3.

Mr. R. E. Smith suggests eliminating the first and second paragraphs.

Reason: Unnecessary after October 1, 1914.

Mr. C. E. Fuller suggests eliminating first paragraph.

Reason: Second paragraph prohibits interchange of cars equipped with stem or spindle attachments after October 1, 1914.

Also, that date in third paragraph be changed to October 1, 1916.

Reason: Present date does not allow sufficient time for some roads to stencil all their cars.

RECOMMENDATION: Suggestion regarding first paragraph approved. Suggestion regarding second paragraph is not approved, for

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the reason that the responsibility in connection with a car equipped with a stem or spindle attachment must be outlined in the rules. See new Rule 3; also for the reason that the time for the removal of American continuous draft rods has been extended. See new Rule 3.

Also, that last paragraph be changed to apply to journals instead of journal bearings.

Reason: To facilitate the interchange of cars.

RECOMMENDATION: Your committee feels that the wording as outlined in new Rule 3 covers exactly the thought of the Association, that is, to insist on the application of M. C. B. Standard journal and journal bearings.

Mr. F. W. Dickinson suggests adding: "Cars having friction draft gear, and so stenciled, if found with other draft gear."

Reason: Cars come home with wrong draft gear (and in two cases with blocks of wood), but all roads handling car deny knowledge of making the wrong repairs.

RECOMMENDATION: Not approved, for the reasons (1) unless absolutely for safety or to comply with the law the interchange requirements should not be unduly increased; (2) the owner is protected by Rule 13 through joint evidence when the car comes home, together with copy of billing repair card, which must be furnished owner whether bill is rendered or not, in accordance with Rule 7.

The New England R. R. Club suggests new paragraph:

"After January 1, 1915, cars not equipped with M. C. B. standard axles, journal boxes and contained parts will not be accepted in interchange."

Reason: Owing to the danger of running cars with small journals, and also to relieve handling line of necessity of making wrong repairs, as they are not expected to carry in stock material other than M. C. B. Standard.

RECOMMENDATION: Not approved. We consider the recommendation desirable, but do not believe it can be carried out in practice.

Also, another new paragraph:

"After October 1, 1916, tank cars not equipped with suitable jacking castings will not be accepted in interchange."

Reason: Owing to danger in handling tank cars when repairs require raising of car.

RECOMMENDATION: Your committee believes this a desirable suggestion, but would refer it to the Tank Car Committee for investigation.

Mr. F. H. Clark suggests change in third paragraph, page 25, to read: "After October 1, 1915, cars not having stenciled the year and month when built new will not be accepted in interchange."

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Reason: It is difficult to show the day of month cars now in service were built.

RECOMMENDATION: Your committee proposes an extension of time until July 1, 1916; also that the date car was built means the month and year the car was built. See new Rule 3.

Also, change fifth paragraph:

"Cars built after October 1, 1914, with journals other than M. C. B. Standard, will not be accepted in interchange."

Reason: Do not believe it proper to confine railroads to standard M. C. B. bearings so long as bearings they are using are interchangeable with M. C. B. standard journal box, wedge and journal.

RECOMMENDATION: Not approved, for reasons in new Rule 3.

The Car Foremen's Assn., Chicago, suggests that last paragraph be omitted because it is not properly located in the rules, and is taken care of in Rule 66.

RECOMMENDATION: Not approved. It has been omitted from this rule and also from Rule 66, and is taken care of under new Rule 3.

The C. I. I. & C. F. Assn. and Missabe Ry. Club suggest adding to rule:

"On and after October 1, 1915, cars of 40,000 lb. capacity will not be accepted in interchange."

Reason: Cars of that capacity are not considered safe to move in heavy trains.

RECOMMENDATION: Not approved. See reasons given in connection with suggestion of Mr. Lewis in Rule 2.

Mr. J. Dickson suggests specifying location and size of stenciling for date built, and show an interpretation as to whether this means a car built entirely new, or a new body on secondhand repaired trucks.

RECOMMENDATION: Not approved. The first part is referred to the Committee on Revision of Standards and the second part is taken care of in revised Rule 3.

RULE 37.

Car Foremen's Assn., Chicago, C. I. I. & C. F. Assn., Missabe Ry. Club, Canadian Ry. Club, Mr. J. E. Keegan, Mr. C. J. Wymer, Toledo Car Inspection Assn., Chicago Car Interchange Bureau, Central Ry. Club, Mr. R. E. Smith, Mr. C. E. Fuller, Niagara Frontier Car Inspection Assn. and Mr. W. J. Stoll suggest eliminating this rule.

Reason: Will permit extensive repairs being made to foreign cars, which will result in the car being kept in more serviceable condition. Owners should assume the responsibility for damage other than covered by Rules 41 and 42, unless caused by unfair usage, derailment or accident.

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The New England R. R. Club recommends elimination of all combinations denoting unfair usage on cars built prior to 1898.

Reason: Such cars are not equal to present heavy power.

The British Columbia Electric Ry. recommends that the heading preceding Rules 37 and 43 be omitted.

Reason: The rules under these headings are somewhat misleading, i. e., it is questionable whether defect card can be claimed for switch chains used on wooden underframe cars under Rule 47, whereas, doubtless, the spirit of the rules is that such regulations apply to all cars.

Armour, Swift, Morris and Cold Blast Trans. Co. suggest that provision be made to protect wooden underframe cars built in accordance with M. C. B. Recommended Practice against unfair usage by maintaining the present combination of damages denoting unfair usage.

Reason: The cars were built in accordance with M. C. B. Recommended Practice for wooden underframe cars, and in justice to the capital invested in them they should be protected against rough handling.

Mr. W. H. Lewis suggests eliminating Rules 37 to 42, inclusive, and substitute a new Rule 37, as follows: "Owners of wood underframe cars will be responsible for all repairs except those necessitated by wreckage, fire, raking or derailment.

Reason: This will then allow roads having cars of this kind in their possession to make repairs, except those resulting from above mentioned causes, without the necessity of writing owners, thereby saving per diem as well as delay.

The Pittsburgh Ry. Club suggests a footnote after the first paragraph of this rule, as follows:

"Short longitudinal sills which are not continuous from end sill to end sill will not be considered as longitudinal sills," for the reason that at the present time there is a difference of opinion between inspectors as to whether the stub or short inter sill should be considered as longitudinal sills and figure in combination defects.

RECOMMENDATION: Your committee has considered the various recommendations regarding the combinations of defects in Rules 37 to 42, inclusive, and notes that a strong sentiment exists in favor of eliminating all the combinations, but we feel that the time is not yet ripe for the complete elimination of all combinations and would therefore make the following suggestion:

Eliminate Rules 37 and 39 and the notes following Rule 42 with reference to continuous draft rods and missing couplers, for the reason that a coupler very seldom appears as a factor in these combinations.

Rule 39.

The C. I. I. & C. F. Assn., Missabe Ry. Club, Canadian Ry. Club, Mr. C. J. Wymer, Toledo Joint Car Inspectors' Assn., Chicago Car Interchange

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Bureau, Central Ry. Club, Mr. R. E. Smith, Mr. C. E. Fuller, Niagara Frontier Car Inspection Assn. and W. J. Stoll suggest eliminating this rule.

Reason: Will permit extensive repairs being made to foreign cars, thus keeping them in more serviceable condition. Owners should assume responsibility for damage other than covered by Rules 41 and 42 unless caused by unfair usage, derailment or accident.

RECOMMENDATION: For suggestions of committee, see Rule 37.

RULE 40.

Mr. C. J. Wymer, Toledo Joint Car Inspection Assn., C. I. I. and C. F. Assn., Chicago Car Interchange Bureau, Missabe Ry. Club, Mr. R. E. Smith, Mr. C. E. Fuller, Niagara Frontier Car Inspection Assn. and Mr. W. J. Stoll suggest eliminating this rule.

Reason: Will permit of more extensive repairs to foreign cars, keeping them in more serviceable condition. Owners should assume the responsibility for damage other than covered by Rules 41 and 42 unless caused by unfair usage, derailment or accident.

Mr. C. B. Ackler suggests that this rule be removed from the bracket under the "combinations" and shown separately as a delivering line's defect.

The Canadian Ry. Club suggests change to read:

"Damaged end sill accompanied by damage to two longitudinal steel sills."

Reason: In long wooden sills bolt holes wear oblong in the sills, which damage can not be discovered until the sills fail, and when such failure occurs the end sill is invariably damaged. In the case of steel sills, the wear of bolt holes, etc., or the deterioration of the sills can not take place unnoticed, and it is only reasonable that should two steel sills and an end sill become damaged, it is ample evidence of unfair usage.

RECOMMENDATION: For suggestions of committee, see Rule 37.

RULE 41.

Central Ry. Club, Mr. W. J. Stoll, C. I. I. and C. F. Assn. and Missabe Ry. Club suggest changing the word "two" to "three."

Reason: This allows for the broadening of combinations mentioned in Rules 37, 39 and 40.

Eliminate first and second footnotes on page 27.

Cars designated will not be accepted in interchange after October 1, 1914. With the elimination of Rules 37 and 39 the second footnote will be ineffective.

Change the word "combinations" to the singular in third footnote.

Reason: To agree with the suggestions for the elimination of Rules 37, 39 and 40.

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The Niagara Frontier Car Inspection Assn. and Mr. R. E. Smith suggest eliminating this rule.

Reason: For the best interests of the service throughout the country.

RECOMMENDATION: For suggestions of committee, see Rule 37.

RULE 42.

The Niagara Frontier Car Inspection Assn., C. I. I. & C. F. Assn., Missabe Ry. Club and Mr. R. E. Smith suggest eliminating this rule and all the explanatory notes following the rule.

Mr. C. E. Fuller suggests eliminating the note referring to cars with continuous draft rods.

Reason: To make rule consistent. Cars so equipped will not be interchanged after October 1, 1914.

The Pittsburgh Ry. Club and Mr. J. E. Keegan suggest eliminating the first two notes after this rule because the combinations covered by these notes should be removed from the rules.

The Pittsburgh Ry. Club suggests a new note, as follows:

"Where cars are damaged in classification or switching and no derailment or raking is present, the repairs thus occasioned will be considered owner's defects unless they form a combination of defects."

RECOMMENDATION: Your committee would recommend the elimination of the first two notes following this rule, as the elimination of Rules 37 and 39 makes these notes unnecessary; also the substitution therefor of the following note:

"When a combination of defects involves decayed parts, or involves longitudinal sills requiring renewal or splicing, due to elongated holes, or to sills split on this account, a joint inspection statement, made as per Rule 120, shall accompany the billing repair card, which together will be authority for bill against the owner,"

so as to make unnecessary the present practice of holding the car for such repairs until owner's authority can be procured.

RULE 43.

Central Ry. Club and Mr. J. E. Keegan suggest extending bracket on left to include heading "All-steel underframe or all-steel cars."

Reason: That the heading may be properly interpreted as applying to Rule 43 only.

The Philadelphia & Reading Ry. suggests changing rule to read, "Any damage to all-steel or steel underframe cars arising from weakness to its framing, unless such damage occurs by wreck, derailment, cornering, sidewiping or improper loading, and except unconcealed fire damage.

Reason: To get greater protection in connection with light designed equipment.

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Mr. F. H. Clark, change as follows: "Any damage to underframe, unless such damage occurred in wreck, derailment, cornering or sidewiping and except unconcealed fire damage."

Reason: Railroads owning wooden cars should be equally as responsible for failure of wooden-underframe cars as railroads owning steel and steel-underframe cars are for failure of such equipment, except for the exceptions mentioned.

The Committee on Car Construction submits the following amendment:

"Existing steel or steel-underframe cars which have less strength than specified below should be classified with wooden cars and subject to the same rules for combination defects. Area of center sills not less than 16 sq. in. Ratio of stress to end strain not more than 0.09. The length of center or draft sill members between braces to be not more than 20 d. where "d" is the depth of the member, measured in the direction in which the buckling might take place."

The Pittsburgh Ry. Club suggests omitting this rule and substituting the following:

"ALL-STEEL CARS, OR CARS WITH STEEL UNDERFRAMES, OR CARS WITH CONTINUOUS STEEL CENTER DRAFT MEMBERS, HAVING A CROSS-SECTIONAL AREA OF 16 SQ. IN. OR MORE.

"Damage to bodies of all-steel cars, or damage to underframe of all-steel underframe cars, or damage to cars with continuous steel center draft members, where necessary to repair, if caused by unfair usage, derailment or accident — delivering company responsible.

"Longitudinal sills, end sills and other steel parts of cars which become defective due to corrosion and which were not damaged in accident (when necessary to repair or splice or renew more than two center sills or two continuous steel center draft members, in combination with end sill, coupler or coupler pockets or front and back coupler stops, the owner's authority must be obtained before repairs can be made) — owner's responsibility.

"NOTE.— The above combination of damage will not apply to cars with a cross-sectional area of less than 16 sq. in. in the center draft members."

RECOMMENDATION: The first suggestion, extending the bracket to include the heading, is approved. Your committee does not see anything further to improve this rule in the present condition of the art. Inspectors can not figure the cross-sectional area of the draft members.

RULE 44.

The Pittsburgh Ry. Club, Central Ry. Club and J. E. Keegan suggest new rule:

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Tank cars having leaky tanks, unless such leaks were caused by wreck, derailment, cornering or sidewiping.

Reason: To overcome controversies between railroads and tank-car owners.

RECOMMENDATION: Not approved, for the reason that the matter is covered by Rules 32 and 48.

RULE 46.

The C. I. I. & C. F. Assn. suggests adding after the word "risk," also if equipped with centrifugal dirt collectors.

RECOMMENDATION: Not approved. The addition of this provision in the rules would necessitate the stenciling of cars, which is not justified by its importance.

Your committee would recommend that this be transferred to paragraph (k), Rule 3.

RULE 47.

The C. I. I. & C. F. Assn., Missabe Ry. Club, Chicago Car Interchange Bureau, C. J. Wymer and Car Foreman's Assn., Chicago, suggest eliminating this rule.

Reason: Chains are being taken care of by freight tariffs and operating rules, and are billed by the forwarding agent as advance charges.

Mr. R. E. Smith suggests eliminating the rule.

Reason: It is unnecessary to chain cars together for twin or triple loads.

Mr. S. G. Thomson and Mr. J. E. Keegan suggest changing rule to read: "Where two or more cars, chained together, or any cars which require chains to handle them, or equipped with metal spacing blocks, in compliance with M. C. B. rules for loading materials, are delivered at an interchange point, the receiving road shall deliver to the delivering road at the time an equivalent number of switch chains or metal spacing blocks of the same size as those used on cars delivered, or in lieu thereof furnish a defect card for such chains or spacing blocks."

Reason: Provisions have been made in the revision of this rule to protect roads using metal spacing blocks in conformity with the loading rules. At the present time metal spacing blocks on cars delivered in interchange are seldom returned to the originating road, and no protection can be secured. This change will also encourage the use of metal instead of wooden blocks, the latter frequently crushing and permitting the lading to shift, requiring shopping for readjustment of lading.

The New England R. R. Club suggests withdrawing from second line the words "or any cars which require switch chains to handle them."

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Reason: Cars other than twin loads requiring switch chains to handle, should not be offered in interchange.

RECOMMENDATION: Not approved, for the reason that the American Railway Assn. has provided, by resolution, that settlement for switch chains shall be made in accordance with M. C. B. Rule 47.

Your committee suggests that the rule be transferred to paragraph (1), Rule 3.

Rule 52.

Central Ry. Club, the C. I. I. & C. F. Assn. and Missabe Ry. Club suggest eliminating first paragraph and substituting the following:

"All safety appliances, when renewed or removed for repairs, must be secured in accordance with Interstate Commerce Commission requirements."

Reason: To conform more closely with the law and adhere to the Interstate Commerce Commission requirements.

Mr. R. E. Smith suggests changing second sentence to read: "Bolts, rivets or screws must be used on parts repaired, whether or not the car is stenciled United States Safety Appliances or United States Safety Appliances Standard."

Add to last sentence of third paragraph, "regardless of whether or not the car has been previously equipped with United States Safety Appliances."

Eliminate the fourth paragraph, as it is superfluous.

Mr. C. B. Ackler suggests omitting the last paragraph.

Reason: Conflicts with the preceding paragraph.

The New England R. R. Club suggests changing the words "to be used" to "must be used."

Reason: To make rule imperative, as a failure to comply is a violation of Safety Appliance Act.

The Pittsburgh Ry. Club suggests new paragraph:

"When it is necessary to use M. C. B. temporary standard couplers to provide the clearance prescribed by the United States Safety Appliance Standards, if not stenciled as so equipped — owner's responsibility."

Reason: To indicate to repairmen and others the kind of coupler that must be used to maintain the safety appliances in conformity with the U. S. Standards.

RECOMMENDATION: The suggestions above are approved, but in a modified form, as follows:

Inside bracket:

"Running boards in bad order or insecurely fastened" — owner's responsibility.

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Outside bracket:

"In making repairs to safety appliance details, nails or lag screws must not be used where screws, bolts or rivets are required by law. Handholds or grabirons must be of wrought iron or steel."

RULE 55.

Messrs. Armour, Swift, Morris and Cold Blast Transportation Co. suggest that provision be made for the carding of cars delivered home with missing brake material provided for by Rule 55 of the 1912 code.

Reason: Cars are being forced on individual car owners with missing materials and defects cards then refused because the rules do not provide for their issuance.

RECOMMENDATION: Not approved, for the reason that such a delivery of a car with missing brake material which will interfere with the efficiency of the hand brake, couplers, or any safety appliance material is in violation of the Federal Appliance Act.

RULE 56.

The M. St. P. & S. S. M. Ry. suggests that second paragraph in regard to brake beams be changed so that railroads will be given much more time to equip cars with metal beams or have former action entirely rescinded.

Reason: The beam they are using is a perfectly safe beam to use, and is probably just as strong as the metal beam being substituted. Expense entirely unwarranted.

Mr. F. A. Torrey and Mr. T. H. Goodnow suggest that date regarding brake beams be extended to 1916.

Reason: The additional time required to complete the work.

RECOMMENDATION: Your committee suggests an extension of time. See revised Rule 3.

RULE 57.

The Pittsburgh Ry. Club, Central Ry. Club and J. E. Keegan suggest cutting out air hose and label on page 31 and modify it to show that label is located within 6 in. of hose coupling.

Reason: To harmonize with M. C. B. specifications.

Change third paragraph to read, "No new hose should be applied unless it bears the revised band label."

Change fourth paragraph to read, "M. C. B. standard hose now in service will not be penalized."

RECOMMENDATION: The Central Ry. Club recommendation is approved, for the reason that it renders the label observable from both

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sides of the car, and the label in this position is less liable to injury from chafing.

Change third and fourth paragraph to read:

> "After October 1, 1914, the delivering line will be responsible for hose not conforming with the 1913 M. C. B. Standard specifications and so labeled, except that 1905 M. C. B. specification hose, the date of which shows it was manufactured before October 1, 1914, may continue in service until it is worn out."

RULE 58.

The Pittsburgh Ry. Club and Mr. F. W. Dickinson suggest adding "air hose cut by striking."

Reason: To comply with Arbitration Committee decision.

RECOMMENDATION: Not approved, for the reason that there are so many other ways that a hose can be unfairly damaged that it will complicate the rule to add this item.

RULE 59.

Mr. W. J. Robider suggests inserting "handles to angle cocks, cut-out cocks and retaining valves when lost or broken."

Reason: Seldom broken or lost in unfair usage.

RECOMMENDATION: Not approved, for the reason that your committee feels that these handles do not become missing or broken in fair usage.

The C. I. I. & C. F. Assn. suggests eliminating in the seventh line the words "on account of insecure fastenings" and substituting the words "unless damaged by derailment or accident."

Reason: To make car owners responsible for broken air-brake fittings unless car has been in accident.

The Missabe Ry. Club suggests changing rule to read: "Air hose burst, torn or worn out; air-hose label illegible or missing from wear; air-hose couplings that have become defective in fair usage; leaky pipe or pipe fittings on account of rust or seams; broken pipe fittings unless damaged by derailment or accident; release valve rods defective or missing; dirt collectors burst account of accumulation of water freezing; failure or loss under fair usage of other parts of brakes."

Reason: To make owners responsible for damage to air brakes under fair usage.

RECOMMENDATION: Not approved, for the reason that Rule 59 provides that the delivering company is responsible for any damage caused by unfair usage, derailment or accident, and Rule 59 provides that

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the owner is responsible when the pipe or pipe fittings are not securely fastened. The recommendation will in no way increase the owner's responsibility. Your committee would propose that the Executive Committee refer to the Train Brake and Signal Committee the question of proper location of centrifugal dirt collectors, for the reason that some roads are applying them in such position that they trap the water from the train line, and consequently are liable to freeze in the winter time.

Rule 60.

The Pittsburgh Ry. Club, the C. I. I. & C. F. Assn., Missabe Ry. Club, Mr. J. E. Keegan, Mr. F. H. Clark, Car Foremen's Assn., Chicago, and Central Ry. Club suggest adding sentence to third paragraph, as follows: "Old markings must be erased before new stenciling is applied."

Reason: If not removed, it is confusing.

RECOMMENDATION: Approved, for the reason given.

Rule 62.

RECOMMENDATION: Your committee would recommend that this rule be changed to read:

"In replacing air-brake hose on foreign cars, new M. C. B. standard 1913 specification hose must be used."

Reason: To conform with the proposed change in Rule 57, and to provide that under all conditions of repairs to foreign cars, M. C. B. standard specification hose must be used.

Rule 64.

Mr. C. B. Ackler suggests new rule, "Journal bearings renewed on account of hot box."

Reason: Should be a delivering line defect, because a hot box on a car in transit over a foreign line looks like carelessness on the part of the line in not complying with Rule 1.

RECOMMENDATION: Not approved, because it is an owner's defect and is already covered by Rule 67.

The New England R. R. Club suggests moving Rule 65 to new Rule 64, extending bracket to embody same under owner's responsibility, "Size of journals must be stenciled on trucks."

Reason: Some private lines fail to stencil size of journal, while others are stenciling same on body of car.

RECOMMENDATION: Not approved. It is unnecessary; this can be easily determined by inspection.

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Morris, Armour, Swift and Cold Blast Transportation Co. suggest that provision should be made to protect owners of private cars for materials missing from trucks and bodies of cars on delivery home, except nuts, oil box lids, truck springs, side bearings and truss rod saddles.

Reason: Cars leave home fully equipped. The rules provide for their care at our expense, and cars should be returned in same condition as delivered. The handling company gets the benefit of this material by its use on their own or foreign cars, and should protect car owner against his loss.

RECOMMENDATION: Not approved. See remarks in connection with Rule 55 for brake material missing from trucks of cars offered home.

RULE 66.

Mr. S. G. Thomson, S. M. P., P. & R. Ry., suggests after the word "with" insert "axles or," so as to read "axles or journal bearings," etc.

Reason: To enforce the use of M. C. B. standard axle and journal bearing:

Mr. W. H. Lewis suggests eliminating this rule, as it is covered in Rule 35.

RECOMMENDATION: Both suggestions are approved, see rewording in revised Rule 3.

RULE 67.

Mr. R. E. Smith suggests adding to last sentence "with the exception of brake shoes, which may have a minimum clearance of 1½ in. above the rail."

RECOMMENDATION: Not approved, because no reasons are given.

RULE 68.

The New England R. R. Club and Canadian Ry. Club recommend that the condemning limit of slid flat wheels be changed from 2½ in. to 2 in.

Reason: Owing to the heavier capacity cars now in service and the high carbon rails now in use, it is dangerous to run a wheel with a flat spot over 2 in. in length.

The Car Foremen's Assn., Chicago, and the C. I. I. & C. F. Assn. suggest that rule be changed to read:

"Flat sliding, cast-iron or cast-steel wheels; if the spot is 2½ in. or over in length on cars of less than 80,000 lb. capacity and 2 in. or over in length on cars of 80,000 lb. capacity or over" (balance of rule the same).

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Reason: It is now the general practice to withdraw wheels with flat spots from cars, taking into consideration the capacity of the car.

RECOMMENDATION: Not approved, for the reason that there are a very few members of the Association who recommend the change, and because it would result in a very considerable additional expense to car owners if agreed to.

Rule 69.

Chicago Car Interchange Bureau and the C. I. I. & C. F. Assn. suggest changing rule to read:

"Chipped flange, if chip exceeds 1½ in. in length and 1¾ in. in width; broken flange, except as in Rule 78; broken rim, if not caused by defective casting, if the tread, measured from the flange at a point ⅝ in. above tread, is less than 3½ in. in width (see Fig. 5), if caused by derailment or accident."

Reason: Chipped flanges under all conditions, except in cases of accident or derailment, should be owner's defects.

Central Ry. Club suggests eliminating from this rule, after the figure "78," the second, third and fourth lines up to the word "broken."

Reason: This should be included in owner's defects, due to the fact that the causes in many cases are the same.

Mr. S. G. Thomson, S. M. P., P. & R. Ry., suggests changing rule to read:

"Broken flange, except as in Rule 78; broken rim, if not caused by defective casting, if the tread, measured from the flange at a point ⅝ in. above tread, is less than 3¾ in. in width (see paragraph 5); also chipped flange or any breakage to flange or rim caused by unfair usage, wreck, derailment or accident."

Reason: To make owners responsible for damage other than by unfair usage, accident, etc.

Mr. W. J. Stoll, Mr. C. J. Wymer and Missabe Ry. Club suggest omission of reference to chipped flange in second, third and fourth lines.

Mr. W. H. Lewis suggests elimination of reference to broken flange. It is taken care of in Rule 78.

The Car Foremen's Assn., Chicago, suggests omitting from the rule the clause referring to chipped flanges.

Reason: Owner should be responsible for chipped flanges in all cases.

RECOMMENDATION: Your committee would recommend that the rule be changed to read:

"Broken flange; chipped flange, if chip exceeds 1½ in. in length and ½ in. in width. Broken rim, if tread measured from flange at a point ⅝ in. above tread is less than 3¾ in. in width (see Fig. 5), provided these defects are caused by derailment or wreck."

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Reason: Approved, to provide that a chipped flange, on either side of the flange, is an owner's defect, except when caused through derailment or wreck. For quite a number of years it has been the practice to assume that a chip on the throat side of the flange was a delivering company's defect, while a chip on the opposite side was an owner's defect. There seems to be no good reason for maintaining this difference in responsibility, because if the flange fails through weak or faulty construction, the chip will take place either side of the flange. This change places the responsibility where it belongs, will tend to encourage the best methods in the manufacture of wheels, and will simplify billing.

In reference to broken rims, your committee feels that a broken rim is due to wheel not being sufficiently strong to meet average service conditions or defective casting, and that should be owner's defect except when occurring through wreck or derailment.

Rule 70.

Mr. E. Naylor suggests adding under delivering line responsibility "Cars equipped with metal draft gear, and so stenciled, when substituted with any wrong repairs."

Reason: Inability to place the responsibility for such wrong repairs, throwing the making of proper repairs on the owner.

RECOMMENDATION: Not approved, because the owner should protect himself through joint evidence, together with copy of billing repair card, such billing repair card being furnished owner whether bill is made or not, as per Rule 7.

Rule 71.

The New England R. R. Club suggests that shelled-out spots 2½ in. be changed to 2 in.

Reason: Same as under Rule 68.

RECOMMENDATION: Not approved, for the same reason as given under Rule 68.

Rule 73.

The New England R. R. Club suggests changing measurement in second line from 2½ in. to 2 in.

Reason: Same as given under Rules 68 and 71.

RECOMMENDATION: Not approved, for the reasons given under Rule 68.

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RULE 78.

Your committee would recommend changing rule to read:

"Cracked or broken flange, chipped flange if it exceeds 1½ in. in length and ½ in. in width; broken or chipped rim, if tread measured from the flange at a point ⅝ in. above tread is less than 3¾ in. in width (see Fig 5); cracked tread, cracked plate, one or more cracked brackets, or broken in pieces, provided these defects were not caused by derailment or wreck."

Reason: To conform to change made in Rule 69.

RULE 79.

RECOMMENDATION: Your committee would recommend that this rule be made vacant, because it is included in Rule 78.

RULE 80.

RECOMMENDATION: Your committee would recommend that the first paragraph be eliminated, because it has been included in Rule 78.

RULE 82.

Chicago Car Interchange Bureau suggests change to read:

"Chipped flange: if chip is on either side of flange and exceeds 1½ in. in length and 1¾ in. in width."

Reason: Chipped flanges on both sides of wheels should be owner's defects, and length should be increased, as the present dimensions are too small and can be increased with safety.

Central Ry. Club, the C. I. I. & C. F. Assn., Mr. S. G. Thomson, S. M. P., P. & R. Ry., Mr. W. J. Stoll and Missabe Ry. Club suggest eliminating the word "the" in the first line, and in the second line the words "opposite," "from" and "throat," and substitute after the word "on" the word "either." In the last line change the figures 1½ to 1¾.

Reason: The same as given in Rule 69. The change in the figures is to allow greater margin in cutting out cars. A wheel can be chipped to the extent of 1¾ in. without any detriment or danger.

Mr. W. J. Robider and Mr. C. J. Wymer suggest that a chip on either side of flange be made an owner's defect.

Reason: No reason for holding delivering company responsible for one and owner responsible for the other.

The Car Foremen's Assn., Chicago, suggests changing rule to read:

"Chipped flange exceeding 1½ in. in length and ½ in. in width."

Reason: See Rule 69.

RECOMMENDATION: Your committee suggests that this rule be made vacant, because it has been included in Rule 78.

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RULE 83.

The Pittsburgh Ry. Club, the C. I. I. & C. F. Assn., Car Foremen's Assn., Chicago, Mr. S. G. Thomson, Mr. J. E. Keegan, Mr. W. H. Lewis and the Central Ry. Club suggest that cut of wheel defect and worn coupler limit gage to have notch shown indicating 2-in. measurement for flat spots on wheels.

Reason: To cover the addition made in Rule 68 in the 1913 rules.

The New England R. R. Club suggests changing condemning limit from 2½ to 2 in.

Reason: Same as under Rules 68, 71 and 73.

RECOMMENDATION: The suggestion of adding 2-in. dimension on wheel defect and worn coupler limit gage has already been provided for by the Committee on Standards.

The suggestion of the New England Club to change the condemning limit from 2½ in. to 2 in. is not approved. See Rule 68.

The reference on page 41, under Fig. 5, should be changed to read: "See Rules 69 and 78."

RULE 84.

Mr. C. E. Fuller suggests that cut journals be made an owner's responsibility.

Reason: Cut journals will develop notwithstanding the fact that the provisions of Rule 1 have been complied with, therefore cut journals should not be considered a handling line's responsibility.

The C. I. I. & C. F. Assn., Missabe Ry. Club and Mr. C. J. Wymer suggest that cut journals be omitted.

Reason: Can not always be attributed to neglect, and is out of harmony with Rule 48, on account of being a concealed part.

RECOMMENDATION: Not approved. Would in no way tend to any additional safety.

RULE 85.

The C. I. I. & C. F. Assn. and Missabe Ry. Club suggest changing rule to read:

"Cut journals, axles broken or having seamy journals," etc.

Reason: To comply with change recommended in Rule 84.

RECOMMENDATION: Not approved, for the reasons given under Rule 84.

RULE 86.

Mr. W. H. Lewis suggests omission of reference to axles for cars of less than 50,000 lb. capacity.

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Reason: There are no cars of 30,000 lbs. capacity in service and very few 40,000 lb. cars. They should be refused in interchange, compelling owners to confine them to use on their own rails.

RECOMMENDATION: Not approved. This matter is a subject of investigation by another committee.

Rule 87.

The Pittsburgh Ry. Club, Central Ry. Club and Mr. J. E. Keegan suggest elimination of reference to Rule 35.

Reason: Account of change in Rule 35, Mr. R. E. Smith suggests incorporating in the rule the exceptions in other rules referred to, so as to make the rule self-contained, so that no other rules will have to be referred to.

RECOMMENDATION: Your committee would suggest that the rule be changed to read:

"Any company making improper repairs is solely responsible to the owner, with the exception of the cases provided for in Rules 3, 56, 57 and 70, and excepting that a company applying axles smaller than the limits given under Rule 86 shall not be held responsible for improper repairs if the car is not stenciled showing the capacity or maximum weight, or or Limit Weight I or Limit Weight II."

To conform with changes already provided in Rule 28.

Rule 88.

Mr. R. E. Smith and New England R. R. Club suggest changing the word "shall" to "must" in the second line.

Reason: To make the rule more imperative.

RECOMMENDATION: Approved, for the reason given.

Rule 90.

The Pittsburgh Ry. Club, the Central Ry. Club and Mr. J. E. Keegan suggest eliminating reference to Rule 35.

Reason: Account of change in Rule 35.

Mr. R. E. Smith suggests including in the rule the exceptions referred to in the rules named therein, so as to make the rule self-contained and that no other rules will have to be referred to.

RECOMMENDATION: The only change your committee would suggest would be to change the reference to Rule 3 instead of Rule 35.

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RULE 91.

Mr. R. E. Smith suggests eliminating the words "under Rule 16" in the second line.

Reason: These are unnecessary.

Change the word "should" to "must" in the third line of note under this rule.

Reason: To make it more imperative.

RECOMMENDATION: The first suggestion is not approved, because we consider the words "under Rule 16" an essential part of the rule. The second suggestion is approved for the reason given.

RULE 93.

Central Ry. Club and the C. I. I. & C. F. Assn. suggest adding to second paragraph, "unless otherwise designated in the Equipment Register."

Reason: To take care of any leased cars operated by a railroad company.

RECOMMENDATION: Not approved. This separation of bills is a request of the car owner for his own benefit, and therefore he should bear the burden.

RULE 94.

Chicago Car Interchange Bureau and Car Foremen's Assn., Chicago, suggest adding the words "except for material on cars destroyed."

Reason: Car owner is entitled to reimbursement for money value of the material destroyed for which the handling line is responsible. If the car did not receive unfair usage by the handling line, it would continue in service, for which the owner would obtain revenue, but no labor charge should be allowed, because no labor would be spent on the cars.

The C. I. I. & C. F. Assn. suggests adding "except when cars are taken out of service by the owner and dismantled, in which case bill may be made against the road issuing defect card for cost of material only. In case a car is dismantled on intermediate line bearing a defect card, the handling line has authority to bill the road issuing the defect card for 50 per cent of the value of the defect card."

Reason: The car owner is entitled to be reimbursed for loss of his car, which in many instances was fit for a number of years of service, and it is felt that he should be entitled to bill the road responsible for damage for the cost of material, but no labor, for the reason that no labor was expended.

RECOMMENDATION: Not approved, for the reason that it is contrary to the principles of this Association to pay for material that was never replaced.

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RULE 95.

Mr. R. E. Smith suggests changing the fourth paragraph to read: "Couplers, including yokes, when lost with the coupler."

Also add new paragraph reading, "Draft springs and followers, whether lost with the coupler or not."

Reason: That no bills will be rendered for material in replacing draft springs and followers, which are lost when the coupler is not.

Mr. C. J. Wymer suggests omitting second and third paragraphs.

Reason: Such parts, when lost, are generally badly damaged or are only fit for scrap, or require extensive repairs, and the repairing line sustains a loss.

The rules do not permit a defect card in interchange and card is furnished contrary to rule or cars are rejected. If bill for labor and material were allowed, cars could be repaired by received line when delivered near its repair track with missing brake beams and connections which were lost in movement.

RECOMMENDATIONS: Your committee would suggest that the second and third paragraphs be changed to read:

"Brake beams, including shoes, heads, jaws, key bolts, cotters, brake pins and hangers, when lost with the brake beam.

"Brake levers, lever guides, key bolts, pins, cotters, top and bottom brake rods, whether or not they are lost with the brake beam."

"Labor and material may be charged for key bolts, cotters and brake pins when lost independently of above items."

to clarify the rule as previously written.

Mr. Smith's suggestion is not approved, as it presupposes the fact that a follower or spring when lost without the coupler was in good condition, which is not a fact, as springs and followers, when lost by themselves, are usually lost because they are defective.

Mr. Wymer's suggestion is not concurred in, as the M. C. B. rules prohibit the acceptance of a car with brake material missing which might interfere with the efficiency or operation of the hand brake.

RULE 98.

The Missabe Ry. Club suggests separate prices for scrap and secondhand wheels, as the present average credit price results in many roads having a large stock of good secondhand wheels for which they could only collect scrap value, could they be put under foreign equipment.

RECOMMENDATION: Not approved. This rule has been in operation now for a year and has worked very well. The reasons for adopting the average credit price were fully outlined by the Price Committee. They found, after making a very complete investigation, that 70

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per cent of the wheels removed were scrap, while 30 per cent were second-hand. They also developed the fact that the price given in the 1912 and preceding rules for scrap wheels were too high. Under the rule as previously written it permitted the application of a wheel which was practically a scrap wheel and enabled the repairing line to charge a second-hand price for it. The 1913 rule has taken away any incentive on the part of a repairing line to give the car owner an unserviceable wheel. Your committee feels that the 1913 rule should not be changed.

RULE 99.

The New England R. R. Club suggests elimination of first and second paragraphs.

Reason: Change in Rule 35 removes the necessity of these requirements.

RECOMMENDATION: Not approved, for the same reasons given to their recommendations under Rule 35.

RULE 105.

RECOMMENDATION: Your committee suggests that a note be added to this rule, as follows:

"NOTE.— Manufactured articles are those which are not subject to competitive prices, and which can only be obtained from one manufacturer or concern."

to more fully explain the term used.

RULE 112.

RECOMMENDATION: Your committee would recommend that Rule 112 be changed to read as follows:

"When the body or trucks of a foreign car are destroyed or badly damaged, the owner shall, upon request, furnish depreciated value of body and trucks separately (the same to be figured from the date the car was originally built), and the party damaging shall have the option of rebuilding or settling under the depreciated value.

"If it is decided not to rebuild, the owner must be immediately advised."

The abolition of the home route card, as proposed in Rule 120, will make unnecessary the requirements of the latter part of Rule 121, and therefore the requirements of the first part of that rule have been embodied in Rule 112, and Rule 121 made vacant.

RULE 113.

The C. I. I. & C. F. Assn., Chicago Car Interchange Bureau, Car Foremen's Assn., Chicago, suggest changing to read: "For the mutual

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advantage of all car owners, the settlement for a car when damaged or destroyed upon a private track, shall be assumed by the railroad company delivering the car on such tracks, except in cases where cars are delivered upon the owner's tracks."

Reason: It is unfair to discriminate between private and railroad owned cars.

RECOMMENDATION: Not approved, for the reasons given in Arbitration Cases 359 and 929.

RULE 115.

Mr. C. E. Fuller suggests that in returning trucks the handling line be permitted to issue its defect card for the wheels and axles, and retain same.

Reason: To eliminate the expense connected with the freighting of wheels and axles.

Also, change last paragraph to read: "The underframes of damaged steel underframe cars when intact and in serviceable condition may be forwarded to the owner with defect card covering the damage to the superstructure, and must be accepted by the owner."

Reason: To discourage the freighting home of badly damaged underframes which the owner is not justified in using to rebuild the car.

RECOMMENDATION: Your committee suggests that the last phrase of the last paragraph be changed to read: "except that second-hand value will be allowed for all metal brake beams good for further service and the average credit price for wheels," to conform with the interpretations given in Circular No. 26.

Your committee would also recommend the abolition of the last paragraph of this rule (top of page 84) in reference to the underframes of damaged steel and steel-underframe cars, because the adoption of revised Rules 112 and 120 will render this provision no longer necessary.

RULE 120.

Chicago Car Interchange Bureau, the C. I. I. & C. F. Assn., suggest new rules as follows:

120 A. A car unsafe to load on account of general worn-out condition due to age, decay or corrosion shall be jointly inspected by the handling line and a representative of the owner or disinterested line, whichever can be most conveniently obtained by the handling line. If the inspectors agree, the joint inspection shall be sent to the car owner, showing in detail all defects found on the car, and upon receipt of this information the car owner shall furnish authority authorizing the handling line to either make repairs or destroy the car at owner's expense and the amount to be allowed the car owner for scrap credit.

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Reason: Cars that have become in a general worn-out and unserviceable condition should be either rebuilt or destroyed at the car owner's expense. A uniform price should be inserted in the rules for dismantling cars of the various capacities.

120 B. A car having a combination of defects due to becoming worn out in ordinary service and not on account of fair usage as provided for by these rules, shall be jointly inspected by the handling line and a representative of the car owner or a disinterested line. This joint inspection shall be handed to the handling line as their authority to bill, and shall be attached to their bill covering repairs made.

Reason: It is now necessary to take up with the car owner for authority cases where a car has a combination of worn-out parts necessitating the holding of car, paying per diem, until such authority is received, resulting in the per diem accruing on the car for which the holding line is responsible, also keeping the car out of service.

Mr. R. E. Smith suggests changing last sentence in first paragraph to read: "If the owner elects to have the car destroyed, the handling line shall return to the owner, freight collect, such parts as the owner may desire returned, and shall allow credit for all material retained at M. C. B. scrap prices, less labor cost of destruction."

Reason: This would encourage the destruction of old worn-out cars and thus relieve the service of an objectionable and dangerous class of equipment, as the owner would authorize the dismantling of many cars now brought home under home-route cards in order to get possession of the air brakes and other serviceable parts.

Mr. F. W. Dickinson suggests adding: "Home-route cards will protect intermediate roads from responsibility for any defects."

The road requesting home-route cards shall be responsible to the owner for any defects found to be due to unfair usage instead of to age and decay. If the owner desires to make a claim against the road asking for home-route cards, it shall forward a joint evidence to the road requesting same, and the car shall be held at the junction point where received for at least fifteen days after the joint evidence has been forwarded, so the other road may have an opportunity of inspecting the car by its own inspector.

Morris, Armour, Swift and Cold Blast Trans. Co. suggest that provision be made to allow car owners to bill on defect cards covering damaged cars when the car owner elects to dismantle the car rather than repair it.

Reason: It should be optional with the car owner as to whether the car should be repaired or not. The carrier is admittedly responsible for the damage and should pay for same.

Provision should also be made for rebuilding allowance when settling for destroyed cars.

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Reason: The rebuilding of a car increases its value and should lessen its depreciation. The Car Foremen's Assn., Chicago, suggest changes to read:

"A car unsafe to load on account of general worn-out condition due to age and decay or corrosion, shall be jointly inspected by the handling line and a representative of the owner or disinterested line, whichever may be most conveniently obtained by the handling line, and such inspection be forwarded to the car owner, and upon receipt of this information the owner shall furnish authority to the handling line to either repair or destroy the car at the owner's expense, allowing the proper credit for scrap."

Reason: Cars that have become in unserviceable condition should be repaired or destroyed where they are, and the uniform practice should be made for dismantling cars, after proper inspection, with the proper allowance for scrap. The Chicago Car Foremen's Assn. suggests in case recommendations in Rules 37 to 40 are not adopted, that an addition to Rule 121 be made as follows:

"A car having a combination of defects due to ordinary wear and tear, and not due to unfair usage as provided in these rules, shall be jointly inspected by the handling line and a representative of the car owners or disinterested line. If this joint inspection shows the defects properly chargeable to the car owner this joint inspection shall be authority for the handling line to make repairs at the owner's expense."

The C. I. I. & C. F. Assn. makes the above suggested addition to this rule.

RECOMMENDATIONS: None of the above suggestions are approved, because it was not found possible to carry out the provisions of this rule as revised in 1913. The revision as outlined for 1913 was only proposed as an intermediate step. The revision as proposed this year is made with the thought that a car not safe to load on account of being in a general worn-out condition is not a safe car to transport empty, and that such a car from the standpoint of safety should either be destroyed or repaired at the point from which it is reported.

The reasons given for the proposed change in the rule will apply with reference to the recommendations made for changes therein. The provision recommended for obtaining a joint statement in the case of combination defects where a portion of the combination was due to decay has been provided for in the note following Rule 42.

Your committee would recommend that the rule be changed to read as follows:

"A car unsafe to load on account of general worn-out condition due to age, decay or corrosion, shall be jointly inspected by the handling line and a representative of the owner of or a disinterested line, whichever can be most conveniently obtained by handling line. If inspectors agree that the car is unsafe to load on account of general worn-out condition

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due to age, decay or corrosion, the result of such joint inspection, entered on form shown on page 4, shall be sent to the car owner, showing in detail all defects found on car, also an estimate of the cost to rebuild the car. Upon receipt of this information the owner must either authorize the destruction of the car, or authorize the handling company to rebuild it. In the latter case the owner must forward to the handling company complete plans and specifications necessary for the rebuilding of the car. If the owner elects to have the car destroyed, the handling line shall allow credit for all material at M. C. B. scrap prices, less labor cost of destruction.

RULE 121.

Chicago Car Interchange Bureau, the C. I. I. & C. F. Assn. suggest eliminating this rule.

Reason: When cars can not be delivered home direct as provided for in Rule 2 they should either be repaired or settled for at depreciated value by the handling line, as it is unnecessary to handle cars in a defective condition in transit, and the road damaging the car should either repair or settle at depreciated valuation.

Mr. H. H. Harvey suggests that wrecked cars moving home under Rule 121 have a defect card applied reading:

"This car moving home under Rule 121. Settlement to be made by joint inspection at destination."

RECOMMENDATION: Your committee suggests that rule be eliminated, as it is taken care of in revised Rule 112.

RULE 122.

The Central Ry. Club, the C. I. I. & C. F. Assn. suggest eliminating the word "hairfelt."

Reason: On account of the various thicknesses and different styles of insulation used.

The Pittsburgh Ry. Club suggests changing last paragraph to read:

"Lumber, forgings, merchant structural shapes and bars, hardware stock, paint, hairfelt, piping, air-brake material and all M. C. B. standard material."

Reason: Merchant structural shapes and bars have been added because they can be obtained in the open market, and therefore should be furnished from the stock of the railroad handling the car rather than delay repairs to cars to obtain this material from car owner.

Mr. E. Naylor suggests adding between first and second paragraphs on page 94:

"Requisitions will be accompanied by a joint inspection report, which must show whether damage is old or new and whether any indications of unfair usage, when material ordered reaches the value of $10 or more.

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Reason: Addition is self-explanatory.

Mr. W. H. Lewis suggests that rule say just what materials are to be furnished by the road repairing the car.

Reason: The last paragraph mentions the material that owners shall furnish from their own stock, but makes no reference to the furnishing of angle irons, channel bars, etc. By having the owner furnish this it will assist in placing the car back in revenue service in a much shorter time than if the handling road is compelled to go into the open market, locate and purchase same.

RECOMMENDATION: None of the above suggestions are approved. Your committee would suggest adding in the third line, first paragraph, preceding the word "charges," the words "or express and," an additional paragraph, as follows:

"Material weighing less than 125 lb. gross weight ordered from car owner should be shipped by express,"

to assist in the more prompt repairs of cars.

Rule 124.

The C. I. I. & C. F. Assn. suggests an additional paragraph empowering the Arbitration Committee to have the Arbitration Committee decisions revised from time to time so as to eliminate all absolute decisions that are not consistent with the current rules.

RECOMMENDATION: Not approved, for the reason that it is not necessary.

CARDS.

The C. I. I. & C. F. Assn. suggests that the return card shown on page 98 be changed to read:

RETURN CARD.

Car ..... Number ..... and the word "from" changed to "to," so that it will be understood by trainmen.

RECOMMENDATION: Not approved, for the reason that a return card to take the place of this card has been approved by your committee. See Rule 2.

Rule 127.

Mr. R. E. Smith suggests changing rule to read:

"This code of rules shall be introduced for discussion and revision at one session of the Master Car Builders' Association convention every third year. The Canadian Ry. Club suggests revision every two years."

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Mr. H. L. Osman suggests allowing present code of rules to stand for another year.

RECOMMENDATION: Your committee is not ready to approve these suggestions. It has in contemplation a complete rearrangement of the rules.

PASSENGER CAR RULES.

RULE 3. Central Ry. Club, the C. I. I. & C. F. Assn., suggests adding as an owner's defect: "Equipment and tools missing from the inside of baggage, mail and express cars are an owner's defect when missing at the time of unloading."

Reason: These cars usually come on to a line locked or sealed, and there is no opportunity of inspection until the time of unloading.

RECOMMENDATION: Your committee approves the idea, but would recommend that it should read as follows:

"Equipment and tools missing from the inside of baggage, mail and express cars are an owner's responsibility."

RULE 17. The Southwestern Car Foremen's Assn. suggests a new paragraph as follows:

"Passenger cars offered in interchange with steam hose missing—owner's responsibility."

Reason: In summer months steam hose are removed and not applied until fall. Hose at all times should be an owner's responsibility.

RECOMMENDATION: Not approved, for the reason that every passenger car offered in interchange should be equipped with steam hose, the car to be returned in the same shape as when delivered by the owner.

Also, that all passenger or private cars delivered in interchange with extra loose equipment, such as brasses, jacks, bar, packing, oil, switch-chains, etc., be at owner's risk.

Reason: As the cars are generally locked, it is impossible to see whether these materials are on the car, and therefore should be an owner's responsibility.

RECOMMENDATION: Your committee would recommend the following:

"All inside or concealed parts of passenger equipment cars are at owner's risk."

JOS. W. TAYLOR,
Secretary.

THE SECRETARY: Mr. Chairman, during the year Arbitration Cases Nos. 918 to 954 have been decided and distributed to

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the members, and a copy of same herewith submitted as a part of this report for your approval.

CHAIRMAN CRAWFORD: A motion to approve the decisions of the Arbitration Committee of the cases submitted to them during the past year is in order.

MR. FULLER: I make a motion, Mr. Chairman, that the Arbitration Committee's decisions be approved.

Motion seconded.

CHAIRMAN CRAWFORD: It has been regularly moved and seconded, gentlemen, that the cases submitted to the Arbitration Committee during the past year and decided by them, receive the approval of this convention. As many as are in favor, please signify by saying "aye"; opposed, "no." It is a vote.

THE SECRETARY: During the year your committee has issued several circulars, all of which have been embodied in Circular No. 26, giving interpretations of points that have arisen during the year in the operation of the rules. The questions raised have not been such as have been actual cases for arbitration, but have arisen in different parts of the country in the ordinary interchange of traffic. Your committee believes that this procedure has been beneficial to all concerned, and has resulted in lessening the work of the inspector, the bill clerk, and all concerned.

The President, in his address this morning, referred to this matter, and I believe it will be in order for the members to express themselves as to whether or not the practice should be continued of issuing these small circulars that go into the rule books. Is it a procedure they think we are justified in continuing?

CHAIRMAN CRAWFORD: The Chair would be very glad to have the suggestions of the members on this particular subject. It has been thought desirable by the Arbitration Committee to issue certain interpretations of the rule to avoid continual questions which come to them not in the form of arbitration cases, and these cases have, from time to time, been submitted to the Executive Committee, of which I am a member.

The committee has approved the issuance of them, but it would seem wise that inasmuch as these decisions are interpreta-

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tions by a committee, and affect something that is passed on by the convention, our rules of interchange, that we hear from the members as to the desirability of continuing this practice.

MR. GAINES: I think it is very desirable, indeed, that the practice be continued. I know last year on some of the rules we were all of us pretty well mixed up. Some parts of the country were interpreting some of the rules one way, and other places another, and an expression from the Executive Committee, or the Arbitration Committee, as to an interpretation of these rules, I think is very desirable to straighten everybody out where there is a misconception, and I think the practice should be continued.

CHAIRMAN CRAWFORD: I believe it would be in order to make a motion to approve the interpretations that have already been made.

MR. FULLER: I make a motion, Mr. Chairman, that they be approved and continued.

Motion seconded.

CHAIRMAN CRAWFORD: It has been moved and seconded, gentlemen, that the practice adopted by the Arbitration Committee, and approved by your Executive Committee, that certain interpretations of the rules be made and sent to the members in the form of circulars, be approved and continued. Those in favor please say "aye"; those opposed, "no." It is a vote.

MR. GOODNOW: As long as this is going to be continued, I would like to suggest, if it be possible, that it be issued at an earlier date. The rules were in force about six months before this circular was gotten out.

CHAIRMAN CRAWFORD: Perhaps this being the first time we have tried it, we may be able to do better next time. I believe it is the intention of the Arbitration Committee and the Executive Committee to have these interpretations printed in a suitable form, to be pasted in the book of Interchange Rules, and I know every effort will be made to have them gotten out as rapidly as possible, consistent with the time that it requires to make an interpretation of the rather complex subjects that come up.

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THE SECRETARY: Mr. Chairman, the next order of business is the recommendations of the Arbitration Committee. I believe the members all have copies of the report. They are being distributed now. I would like to say that the Arbitration Committee has two additional suggestions to make, which were agreed to last evening. First in regard to Rule 3, Section m, a new section: "On and after October 1, 1916, refrigerator cars not equipped with door hooks and fasteners to secure the doors in an open position will not be accepted in interchange."

Second, an additional note to Rule 30: This note is brought about by the action of the American Railway Association. Add a note to Rule 30, as follows: "The marked weight shall be the multiple of 100 lb. nearest the scale weight, except that when the scale weight indicates an even 50 lb., the lower multiple shall be used." That is the resolution adopted by the American Railway Association in their weighing problem, and the Arbitration Committee thought best to incorporate that in the rules of interchange.

CHAIRMAN CRAWFORD: The rules or suggestions just read by the Secretary are in addition to those covered by the report of the Arbitration Committee which has been printed and distributed to the members.

THE SECRETARY: I thought, Mr. Chairman, it best to first read these proposed changes. I can now go ahead and read the other suggestion. The first suggestion is a general one. "Chicago Car Interchange Bureau, the C. I. I. and C. F. Assn. recommend that changes in the rules be printed in italics, so that inspectors can more readily become familiar with the changes. Recommendation: Your committee does not concur, but would recommend to the Association that the changes be covered by an insert similar to that used in the 1912 rules."

CHAIRMAN CRAWFORD: What is the pleasure of the Association as to the action to be taken in regard to the report of the Arbitration Committee, regarding changes in the rules?

MR. FULLER: Mr. Chairman, the work of the Arbitration Committee has consumed a good many days and their report is voluminous, and from my perusal of the report believe it is in

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order to move that the Arbitration Committee's report be accepted as a whole, and I move accordingly.

Motion seconded.

CHAIRMAN CRAWFORD: Gentlemen, it has been moved and seconded that the report of your Arbitration Committee be accepted as a whole. Is there any discussion?

MR. MACBAIN: Mr. President, that would include those two proposed changes, would it not?

CHAIRMAN CRAWFORD: As I understand, the amended report would be acceptable to Mr. Fuller and Mr. Gaines who seconded it.

MR. FULLER: Yes, also the two amendments.

CHAIRMAN CRAWFORD: If there is no discussion, shall I put the question?

(Question called for.)

CHAIRMAN CRAWFORD: As many as are in favor of accepting the Arbitration Committee's report, as it has been distributed to you, with the amendments read by the Secretary, please signify by saying "aye"; contrarywise, "no." It is a vote.

THE SECRETARY: The next order of business will be the report of the Committee on Revision of Prices for Labor and Material. Mr. Tatum, I believe, will handle the report for that committee.

CHAIRMAN CRAWFORD: Mr. Tatum, I will be very glad to hear from you.

MR. TATUM: Mr. Chairman and gentlemen, the report of the Price Committee is almost self-explanatory. No circular of inquiry was sent out this year, because it was thought we had better review the work already done in the last two or three years. The committee has decided that next year we should do more work on the passenger car rules in order to bring them up somewhere near the standard of the freight car rules. I do not think it is necessary to read this report through, and for that reason I will only refer to the items which are most important. It will be noticed on page 2 of the report of this year that we

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have simply made some changes that will make the rules more clear than as formerly printed. There are some additional items added, and some few reductions in the prices.

For instance, Rule No. 101, representing 149 items, there is 1 increase, 2 decreases, and two new items added. Rule No. 107, representing 351 items, there are 19 increases, 29 decreases, 8 new items added, and 3 eliminated. In Rule 116, representing 54 items, there are no increases, 1 decrease, and 1 new item added. In the passenger car rules, representing 73 items, there are 2 increases, 7 decreases, 1 new item added, and 5 items eliminated.

The report is as follows:

REPORT OF THE COMMITTEE ON PRICES FOR LABOR AND MATERIAL.

To the Members:

Your special committee, appointed to suggest additional prices or modifications of present prices in the Rules of Interchange, did not prepare a Circular of Inquiry this year, for the reason that it was thought proper by the committee to review the work already done and make such change as to make the rules clearer, as well as make such changes in the present prices as would more nearly represent the average cost of labor and material used in making repairs to car equipment, and add such other items as were presented to them by the Arbitration Committee from time to time for their consideration, and new items which the committee found necessary in connection with its work.

Where no changes have been made in the various items, they are omitted from this report, and only such items as have been changed in any way, are referred to.

As to Price Rules governing passenger car repairs, the principal change made in this part of the rules was to eliminate the duplications and make clearer the reading of the various items.

The committee suggests that for next year special attention be given to the passenger car price rules, in order that they be brought up to the standard of the freight car price rules.

Below is given the number of items contained in each price rule and the

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number recommended to be increased, decreased, new items added and items eliminated:

Rules.	Number of Items in Rule.	Number Items Recommended to be		New Items Added.	Items Eliminated
		Increased.	Decreased.		
Freight Car Rule No. 101.....	149	1	2	2	.....
Freight Car Rule No. 107.....	351	19	29	8	3
Freight Car Rule No. 116.....	54	.....	1	1	.....
Passenger Car Rules.....	73	2	7	1	5

The following is presented for your approval.

Rule 98.—If new wheels and axles are substituted for average credit price wheels and secondhand axles, proper charges and credits shall be allowed, although such substitutions be made on account of only one loose or defective wheel or a defective axle, with the following exceptions: In case the owner of a car removes a damaged wheel or axle, no charge shall be made for any difference in value between the parts used and those removed that are not damaged.

PRESENT PRICES.

The price for new forged or rolled steel wheels shall only apply to such wheels having treads 1⅜ inches thick or over, measured from base line of tread to condemning limit, which is ¼ inch above the witness groove. For wheels having treads less than 1⅜ inches thick as described, a reduction shall be made in the price at the rate of 75 cents per $\frac{1}{16}$ inch thickness (on radius) of tread.

RECOMMENDED PRICES.

The price for forged or rolled steel wheels shall be based on the scrap value of $4.50 for metal inside the condemning limit (which is ¼ inch above the limit groove) plus $0.625 for each $\frac{1}{16}$ inch of service metal (on radius of tread) in connection with standard full flange contour.

IN CASE OF OWNER'S DEFECTS.

No credit will be allowed owner for loss of service metal due to turning off wheels. Should there be a further loss of service metal, however, due to the application of other wheels, the proper credit for such additional loss must be given the owner. Any increase in the amount of service metal, due to the application of other wheels, may be charged to the owner.

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DELIVERING LINE DEFECTS.

When repairs are not covered by a defect card, the proper credit for any loss of service metal must be given the owner; and charge shall be made against the owner for any increase in the amount of service metal, due to application of other wheels.

DELIVERING LINE DEFECTS.

When the repairs are covered by the defect card of another company, charge covering such repairs shall be made against the owner of the car, the defect card and the billing repair card to be attached to the bill. The owner to render counter bill on the authority of the defect card against the company issuing same, including an additional charge to cover the loss of service metal on account of the defects covered by the card. Should there be an additional loss of service metal, on account of the application of other wheels, the company making the repairs shall allow the proper credit to the owner to cover such additional loss of metal. Should there be an increase in the amount of service metal, due to the application of other wheels, such increase may be charged to the owner.

The above provisions shall govern any loss or increase of service metal on account of the mate wheel, even if same is not defective, when both wheels are turned off to correspond.

The necessary information must be given in all cases, as provided in Rule 10.

In cases of slid-flat wheels $\frac{1}{8}$ inch for loss of service metal will be allowed for flat spots 2½ inches long and $\frac{1}{16}$ inch for each additional inch or fraction thereof.

RULE 101.—Bill for repairs made under these rules and for materia furnished shall be in conformity with the schedule of prices and credits for the articles enumerated below:

MATERIAL.	PRESENT PRICES.		RECOMMENDED PRICES.	
	8-In.	10-In.	8-In.	10-In.
Air-brake hose, M.C.B. Standard, credit for fittings for same	$0.80	$0.80	$0.60	$0.60
NEW ITEM: Cylinder front cap gasket (New York Triple)			.15	.15

NOTE.—Other air-brake material to be charged at catalogue prices.

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Material.	Present Prices.		Recommended Prices.	
	Charge.	Credit.	Charge.	Credit.
Coupler body, M.C.B., one, new, steel 5-in. by 5-in. shank...	$5.90	$1.10	$5.00	$1.10
Coupler body, M.C.B., temporary standard, one, new, steel 5-in. by 7-in. shank...	7.90	1.35	7.00	1.35
Journal bearings, brass or bronze, lined or unlined, per pound, applied...	.18	.13	.18	.12
Journal bearings, filled brass or bronze shell, per lb., applied...	.14	.10	.14	.12
New Item: Lag screws, all sizes, each, net...	.....	.....	.03	.....
Spring cotters or split keys, separately or in connection with other repairs, each, applied...	.03	.....	.....	.....
Change to Read: Spring cotters or split keys, each renewed, when not used with application of other parts being renewed, net...	.....	.....	.03	.....

Rule 107.—The following table shows the number of hours which may be charged for labor in doing the various items of work necessary to complete each item of work enumerated, which includes all work necessary to complete each item of repairs, except in so far as labor is already included in charges for material:

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	Present Prices.				Recommended Prices.			
	Ordinary Cars.		Refrigerator Cars.		Ordinary Cars.		Refrigerator Cars.	
	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.
Anchor rod (bolster and dead wood), blacksmith labor, repairing	1	$0.28	1	$0.28				
CHANGE TO READ: Anchor rod (bolster and dead wood), blacksmith labor repairing, including R and R					1¾	$0.49	1¾	$0.49
Anchor rod, head block tank car or Gould draft, blacksmith labor repairing	¾	.21	¾	.21				
CHANGE TO READ: Anchor rod, head block tank car or Gould draft, blacksmith labor repairing, including R. and R					1¾	.49	1¾	.49
Anchor tank band, blacksmith labor repairing	1	.28						
CHANGE TO READ: Anchor tank band, blacksmith labor repairing, including R. and R					2	.56		
Anchor tank band "Y" bolt, blacksmith labor repairing	¾	.21						
CHANGE TO READ: Anchor tank band "Y" bolt, blacksmith labor repairing, including R. and R					1¼	.35		
Anchor or lug straps, blacksmith labor repairing	¾	.21	¾	.21				
CHANGE TO READ: Anchor or lug straps, blacksmith labor repairing, including R. and R					1¾	.49	1¾	.49
Arch bars, blacksmith labor, each, repairing	2½	.70	2½	.70				
CHANGE TO READ: Arch bar, blacksmith labor, each, repairing, including R. and R					6	1.68	6	1.68
NEW ITEM: Arch bar, blacksmith labor repairing, each, additional, same side of truck, including R. and R					2½	.70	2½	.70

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	Present Prices.				Recommended Prices.			
	Ordinary Cars.		Refrigerator Cars.		Ordinary Cars.		Refrigerator Cars.	
	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.
Arch bar tie strap, blacksmith labor, one repairing	1	$0.28	1	$0.28				
CHANGE TO READ: Arch bar tie strap, blacksmith labor, one, repairing, including R. and R.					2	$0.56	2	$0.56
Belt rail or girth (end) when two posts or braces are renewed, per end	1½	.42	1½	.42				
CHANGE TO READ: Belt rail or girth (end), renewed, when two posts or braces are renewed, per end					1½	.42	1½	.42
Belt rail or girth (end) when not associated with renewal of posts or braces, per end	3	.84	4	1.12				
CHANGE TO READ: Belt rail or girth (end) renewed, when not associated with renewal of posts or braces, per end					3	.84	4	1.12
Bolster, body, metal, one, replaced	9½	2.66	9½	2.66				
CHANGE TO READ: Bolster, body, metal, one, renewed					9½	2.66	9½	2.66
Bolster, body, wood, one, replaced	9½	2.66	12	3.36				
CHANGE TO READ: Bolster, body, wood, one, renewed					9½	2.66	12	3.36
Bolster, body, metal, one, replaced, when draft timbers extend through same.	15	4.20	17	4.76				
CHANGE TO READ: Bolster, body, metal, one, renewed, when draft timbers extend through same.					15	4.20	17	4.76
Bolster, body, plain, metal or wood, one, replaced, when one or more defective sills are replaced	2½	.70	2½	.70				

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CHANGE TO READ: Bolster, body, plain, metal or wood, one, renewed, when one or more defective sills are renewed					2½	.70	2½	.70
Bolster, composite, one, replaced, when one or more defective sills are replaced	3	.84	3	.84				
CHANGE TO READ: Bolster, composite, one, renewed, when one or more defective sills are renewed					3	.84	3	.84
Bolster, truck, one, replaced	9	2.52	9	2.52				
CHANGE TO READ: Bolster, truck, one, renewed					9	2.52	9	2.52
Bolster, truck, one, and one spring plank in same truck, replaced	13	3.64	13	3.64				
CHANGE TO READ: Bolster, truck, one, and one spring plank in same truck, renewed					13	3.64	13	3.64
NEW ITEM: Body truss rod, full length, blacksmith labor repairing, both sections, including R. and R					5	1.40	5¾	1.61
Body truss rod, per section or full length, blacksmith labor repairing	1¼	.35	1¼	.35				
CHANGE TO READ: Body truss rod, first section, blacksmith labor repairing, including R. and R					3	.84	4¼	1.19
Brake connection rod or lever, one or both applied	½	.14	½	.14				
CHANGE TO READ: Brake connection rod, or lever, one or both renewed					½	.14	½	.14
Brake shaft, blacksmith labor repairing	½	.14	½	.14				
CHANGE TO READ: Brake shaft, blacksmith labor repairing, including R. and R					1½	.42	1½	.42
Brake shaft brace or support, blacksmith labor repairing	½	.14	½	.14				
CHANGE TO READ: Brake shaft brace or support, blacksmith labor repairing, including R. and R					1	.28	1	.28
Brake shaft carrier or bow, blacksmith labor repairing	½	.14	½	.14				
CHANGE TO READ: Brake shaft carrier or bow, blacksmith labor repairing, including R. and R					1	.28	1	.28

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	Present Prices.				Recommended Prices.			
	Ordinary Cars.		Refrigerator Cars.		Ordinary Cars.		Refrigerator Cars.	
	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.
Brake shoe, applied on authority of defect card when brake beam is not replaced.	½	$0.14	½	$0.14	.....	.....	.....	.....
CHANGE TO READ: Brake shoe, renewed on authority of defect card when brake beam is not renewed or replaced	.....	.....	.....	.....	½	$0.14	½	$0 14
Buffer-block, one, cast-iron, replacing	1	.28	1	.28	.....	.....	.....	.....
CHANGE TO READ: Buffer-block, one, cast-iron, renewed	.....	.....	.....	.....	1	.28	1	.28
Carrier iron bolts or draft timber bolts, over 6 inches long, either or both, replacing at same end of car, 5 or less, each	½	.14	½	.14	.....	.....	.....	.....
CHANGE TO READ: Carrier iron bolts or draft timber bolts, over 6 inches long, either or both, renewing at same end of car, 5 or less, each	.....	.....	.....	.....	½	.14	½	.14
Center plate bolts, one or more, or all at one end, replacing	3	.84	3	.84	.....	.....	.....	.....
CHANGE TO READ: Center plate bolts, one or more, or all at same end of car, renewing	.....	.....	.....	.....	3	.84	3	.84
Center plate bolts and center plate, at one end, replacing	3	.84	3	.84	.....	.....	.....	.....
CHANGE TO READ: Center plate bolts and center plate, at one end of car, renewing	.....	.....	.....	.....	3	.84	3	.84
NOTE.—If center plate bolts pass through draft timbers, they shall be termed center plate bolts and charged accordingly.								
Coupler stop bolts or draft timber, cross-tie bolts at same end of car, when coupler is not removed, 5 or less, each	½	.14	½	.14	.....	.....	.....	.....

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CHANGE TO READ: Coupler stop bolts, lug strap bolts, or draft timber cross-tie bolts, at same end of car, when coupler is not removed, 5 or less, each, renewing					½	.14	½	.14
6 or more, all	3	.84	3	.84				
CHANGE TO READ: 6 or more, all, renewing					3	.84	3	.84
Draft timber bolts, or carrier iron bolts, over 6 inches long, either or both, at same end of car, replacing, 5 or less, each	½	.14	½	.14				
CHANGE TO READ: Draft timber bolts, or carrier iron bolts, over 6 inches long, either or both, at same end of car, renewing. 5 or less, each					½	.14	½	.14
6 or more, all	3	.84	3	.84				
CHANGE TO READ: 6 or more, all, renewing					3	.84	3	.84
Journal box bolts or column bolts, in same truck, one, replaced	1½	.42	1½	.42				
CHANGE TO READ: Journal box bolt or column bolt, one, renewed					1½	.42	1½	.42
Each additional, replaced	½	.14	½	.14				
CHANGE TO READ: Each additional bolt, renewed, in same truck					½	.14	½	.14
Draft timber bolts, or carrier iron bolts, over 6 inches long, either or both, at same end of car, replacing, 5 or less, each	½	.14	½	.14				
CHANGE TO READ: Draft timber bolts, or carrier iron bolts, over 6 inches long, either or both, at same end of car, renewing, 5 or less, each					½	.14	½	.14
Journal box bolts or column bolts, in same truck, one, replaced	1½	.42	1½	.42				
CHANGE TO READ: Journal box bolt or column bolt, one, renewed					1½	.42	1½	.42
Each, additional, replaced	½	.14	½	.14				
CHANGE TO READ: Each additional bolt renewed, in same truck					½	.14	½	.14
Bolts, 6 inches or less in length, other than those provided for, each, applied	¼	.07	¼	.07				
CHANGE TO READ: Bolts, 6 inches or less in length, other than those provided for, each, renewed					¼	.07	¼	.07

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	Present Prices.				Recommended Prices.			
	Ordinary Cars.		Refrigerator Cars.		Ordinary Cars.		Refrigerator Cars.	
	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.
New Item: Carline, one, replaced, when out of place					1¼	$0.35		
Carrier iron, blacksmith labor, repairing	¾	$0.21	¾	$0.21				
Change to Read: Carrier iron, blacksmith labor repairing, including R. and R					1½	.42		
Column casting, one or both, replaced on same end of truck	3	.84	3	.84				
Change to Read: Column casting, one or both, renewed on same side of truck					3	.84	3	$0.84
Column casting, two, replaced, on opposite sides, same truck	5½	1.54	5½	1.54				
Change to Read: Column castings, two, renewed, on opposite sides of same truck					5½	1.54	5½	1.54
Column casting, when arch bar is off, one or two, applied	½	.14	½	.14				
Change to Read: Column casting, when arch bar is off, one or two, renewed					½	.14	½	.14
Center pin (head), applied	1	.28	1	.28				
Change to Read: Center pin (head), renewed					1	.28	1	.28
Center pin (head), applied, and placing car on center	2	.56	2	.56				
Change to Read: Center pin (head), renewed, and placing car on center					2	.56	2	.56
Center pin (key), applied, including placing car on center if necessary	2	.56	2	.56				

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CHANGE TO READ: Center pin (key or plain), renewed, including placing car on center if necessary					2	.56	2	.56
Center plates, one or two, at same end, replacing	2½	.70	2½	.70				
CHANGE TO READ: Center plates, one or two, at same end, renewed					2½	.70	2½	.70
Corner band, one, replaced	1	.28	1	.28				
CHANGE TO READ: Corner band, one, renewed					1	.28	1	.28
NEW ITEM: Coupler, with complete gear key attachments, renewing or replacing					4	1.12	4	1.12
Coupler cross key, renewed or replaced alone	1	.28	1	.28				
CHANGE TO READ: Coupler or key attachment cross key, renewing or replacing, alone					1	.28	1	.28
Coupler yoke bolts, applied, one or two, at same end of car (coupler, not R. and R)	1	.28	1	.28				
CHANGE TO READ: Coupler yoke bolts, renewed, one or two, at same end of car (coupler, not R. and R.)					1	.28	1	.28
Cross tie timber, one, replaced	6	1.68	7	1.96				
CHANGE TO READ: Cross tie timber, one, renewed					6	$1.68	7	1.96
Cross tie timber, one, replaced, when one or more defective sills are replaced	1½	.42	2	.56				
CHANGE TO READ: Cross tie timber, one, renewed, when one or more defective sills are renewed					1½	.42	2	.56
Dead block, wood, replacing, at one end of car	3½	.98	3½	.98				
CHANGE TO READ: Dead block, wooden, renewed, at one end of car					3½	.98	3½	.98
NEW ITEM: Door siding, renewed, including fixtures and trimmings per lineal foot						.24		.24
Door batten or stile (nailed door), not including R. and R. door, renewed	1	.28	1	.28				
CHANGE TO READ: Door batten or stile (nailed door), renewed, not including R. and R. door					1	.28	1	.28

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	Present Prices.				Recommended Prices.			
	Ordinary Cars.		Refrigerator Cars.		Ordinary Cars.		Refrigerator Cars.	
	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.
Door rail or stile (framed door), not including R. and R. door, renewed	2	$0.56	2	$0.56				
CHANGE TO READ: Door rail or stile (framed door), renewed, not including R. and R. door					2	$0.56	2	$0.56
Draft timbers, one, replaced	7	1.96	9	2.52				
CHANGE TO READ: Draft timber, one, renewed					7	1.96	9	2.52
Draft timbers, two on same end, replaced	11	3.08	13	3.64				
CHANGE TO READ: Draft timbers, two on same end, renewed					11	3.08	13	3.64
Draft timbers, one, extending beyond body bolster renewed	12	3.36	13	3.64	12	3.36	15	4.20
Draft timbers, two, extending beyond body bolster, renewed	16	4.48	17	4.76	16	4.48	19	5.32
Draft timbers, tightened, one end, no additional labor for tightening, when draft bolt or bolts are applied	½	.14	½	.14				
CHANGE TO READ: Draft timbers, tightened, one end, no additional labor for tightening, when draft bolt or bolts are renewed					½	.14	½	.14
End planks on gondola cars, on same end, without corner bands, one plank, renewed	2¼	.63						
CHANGE TO READ: End plank on gondola cars, without corner bands, one plank renewed					3½	.98		

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Without corner bands, each additional plank, renewed	1	.28						
CHANGE TO READ: Without corner bands, each additional plank renewed, on same end of car					2	.56		
With corner bands, bolted or riveted, each, additional plank, renewed	3½	.98						
CHANGE TO READ: With corner bands, bolted or riveted, each, additional plank, renewed, on same end of car					3½	.98		
End plate, one, replaced	14	3.92	15½	4.34				
CHANGE TO READ: End plate, one, renewed					14	3.92	15½	4.34
Hand rail post, each, additional	½	.14						
CHANGE TO READ: Hand rail post, renewed, each, additional					½	.14		
Journal boxes on arch bar truck, One, replaced,	2	.56	2	.56				
Each additional, on same truck, replaced	1½	.42	1½	.42				
CHANGE TO READ: Journal boxes, on arch bar truck, One, renewed					2	.56	2	.56
Each additional, on same truck, renewed					1½	.42	1½	.42
Journal boxes, on solid pedestal truck, One or two, replaced on same axle	4	1.12	4	1.12				
Three or four, replaced on same truck	7	1.96	7	1.96				
CHANGE TO READ: Journal boxes, on solid pedestal truck, One or two, renewed on same axle					4	1.12	4	1.12
Three or four, renewed on same truck					7	1.96	7	1.96
NEW ITEM: Journal box lid, one, renewed					½	.14	½	.14
Nuts only, 1¼ inch or under, replacing four or less	¼	.07	¼	.07				
CHANGE TO READ: Nuts only, 1¼ inch or under, four or less, renewed					¼	.07	¼	.07
Nuts only 1⅜ inch or over, replacing one or two	¼	.07	¼	.07				

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	Present Prices.				Recommended Prices.			
	Ordinary Cars.		Refrigerator Cars.		Ordinary Cars.		Refrigerator Cars.	
	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.
CHANGE TO READ: Nuts only, 1⅝ inch or over, renewed one or two					¼	$0.07	¼	$0.07
Platform end sill plank, one, full length, replaced	2	$0.56	2	$0.56				
CHANGE TO READ: Platform end sill plank, one, full length, renewed					2	.56	2	.56
Platform end sill plank, one-half section, replaced	1	.28	1	.28				
CHANGE TO READ: Platform end sill plank, one-half section, renewed					1	.28	1	.28
Push pole pocket, blacksmith labor repairing	½	.14	½	.14				
CHANGE TO READ: Push pole pocket, blacksmith labor repairing, including R. and R.					1¼	.35	1¼	.35
Release lever (coupler), one replaced	¾	.21	¾	.21				
CHANGE TO READ: Release lever (coupler), one, renewed					¾	.21	¾	.21
NEW ITEM: Release lever (coupler), blacksmith labor repairing, including R. and R.					1¼	.35	1¼	.35
Rod, vertical tie rod, blacksmith labor repairing	½	.14	½	.14				
CHANGE TO READ: Rod, vertical tie rod, blacksmith labor repairing, including R. and R.					1¼	.35	1¼	.35
Roping staple, blacksmith labor repairing	½	.14	½	.14				
CHANGE TO READ: Roping staple, blacksmith labor repairing, including R. and R.					1	.28	1	.28

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Running board, longitudinal, complete, applied	10	2.80	10	2.80				
CHANGE TO READ: Running board, longitudinal, complete, renewed					10	2.80	10	2.80
NEW ITEM: Running board to secure with screws, per lineal foot of single board						.01		.01
Running board bracket, blacksmith labor repairing	½	.14	½	.14				
CHANGE TO READ: Running board bracket, blacksmith labor repairing, including R. and R					1	.28	1	.28
Spring plank, one, replaced	8	2.24	8	2.24				
CHANGE TO READ: Spring plank, one, renewed					8	2.24	8	2.24
Side plank on Gondola car, with corner bands, spliced, one	4	1.12						
CHANGE TO READ: Side plank on Gondola car, with corner bands, one, spliced					4	1.12		
Renewed, without corner bands, one plank	7	1.96						
CHANGE TO READ: Without corner bands, one plank, renewed					7	1.96	8	2.24
Without corner bands, each, additional plank	6	1.68						
CHANGE TO READ: Without corner bands, each, additional plank same side of car, renewed					6	1.68		
With corner bands, bolted or riveted, one plank	10	2.80						
CHANGE TO READ: With corner bands, bolted or riveted, one plank, renewed					10	2.80		
With corner bands, bolted or riveted, each, additional plank	5	1.40						
CHANGE TO READ: With corner bands, bolted or riveted, each, additional plank on same side of car, renewed					6	1.68		
Sill step, blacksmith labor repairing	½	.14	½	.14				
CHANGE TO READ: Sill step, blacksmith labor repairing, including R. and R					1¼	.35	1¼	.35

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	Present Prices.				Recommended Prices.			
	Ordinary Cars.		Refrigerator Cars.		Ordinary Cars.		Refrigerator Cars.	
	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.
Side plate, 1, applied	35	$9.80	45	$12.60	.....	.....	.....	.....
Change to Read:								
Side plate, 1, renewed	.....	.....	.....	.....	35	$ 9.80	45	$12.60
1 center sill, renewed	44	12.32	66	18.48	43	12.04	65	18.20
1 intermediate sill, renewed	39	10.92	57	15.96	30	8.40	52	14.56
2 intermediate sills, renewed	44	12.32	67	18.76	37	10.36	72	20.16
New Item:								
1 intermediate sill, short, for hopper cars, renewed	.....	.....	.....	.....	14	3.92	.....	.....
New Item:								
2 intermediate sills, short, for hopper cars, at one end of car, renewed	.....	.....	.....	.....	16	4.48	.....	.....
1 intermediate sill and 1 center sill, renewed	49	13.72	76	21.28	30	14.00	84	23.52
1 intermediate sill and 2 center sills, renewed	57	15.96	90	25.20	59	16.52	99	27.72
2 intermediate sills and 1 center sill, renewed	54	15.12	84	23.52	57	15.96	103	28.84
2 intermediate sills and 2 center sills, renewed	62	17.36	98	27.44	66	18.48	118	33.04
3 intermediate sills and 1 center sill, renewed	62	17.36	104	29.12	64	17.92	122	34.16
3 intermediate sills and 2 center sills, renewed	70	19.60	118	33.04	73	20.44	137	38.36
4 intermediate sills and 1 center sill, renewed	68	19.04	114	31.92	71	19.88	141	39.48
4 intermediate sills and 2 center sills, renewed	76	21.28	120	33.60	80	22.40	150	42.00
1 side sill and 1 center sill, renewed	63	17.64	95	26.60	59	16.52	91	25.48
1 side sill and 2 center sills, renewed	71	19.88	109	30.52	68	19.04	106	29.68

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2 side sills and 1 center sill, renewed	82	22.96	124	34.72	75	21.00	117	32.76
2 side sills and 2 center sills, renewed	90	25.20	138	38.64	84	23.52	132	36.96
2 side sills, renewed	60	16.80	89	24.92	55	15.40	86	24.08
1 side sill and 1 intermediate sill, renewed	48	13.44	78	21.84	46	12.88	79	22.12
1 side sill and 2 intermediate sills, renewed	53	14.84	95	26.60	53	14.84	97	27.16
1 side sill and 3 intermediate sills, renewed	57	15.96	113	31.64	60	16.80	117	32.76
1 side sill and 4 intermediate sills, renewed	63	17.64	131	36.68	67	13.76	135	37.80
2 side sills and 1 intermediate sill, renewed	64	17.92	107	29.96	62	17.36	105	29.40
2 side sills and 2 intermediate sills, renewed	70	19.60	125	35.00	69	19.32	124	34.72
2 side sills and 4 intermediate sills, renewed	82	22.96	161	45.08	83	23.24	162	45.36
1 side sill, 1 intermediate and 1 center sill, renewed	69	19.32	113	31.64	66	18.48	110	30.80
2 side, 1 intermediate and 1 center sill, renewed	88	24.64	142	39.76	82	22.96	136	38.08
1 side, 2 intermediate and 1 center sill, renewed	89	24.92	155	43.40	73	20.44	129	36.12
1 side, 3 intermediate and 1 center sill, renewed	81	22.68	149	41.72	.....	.....	.....	.....
CHANGE TO READ:								
1 side, 3 intermediate and 1 center sill, renewed	.....	.....	.....	.....	80	22.40	148	41.44
2 side, 3 intermediate and 1 center sill, renewed	100	28.00	178	49.84	96	26.88	174	48.70
2 side, 4 intermediate and 1 center sill, renewed	106	29.68	196	54.88	103	28.84	193	54.04
1 side, 1 intermediate and 2 center sills, renewed	77	21.56	127	35.56	75	21.00	125	35.00
2 side, 1 intermediate and 2 center sills, renewed	96	26.88	156	43.68	91	25.48	151	42.28
1 side, 2 intermediate and 2 center sills, renewed	83	23.24	145	40.60	82	22.96	144	40.32
1 side, 4 intermediate and 2 center sills, renewed	95	26.60	181	50.68	96	26.88	182	50.96
2 side, 2 intermediate and 2 center sills, renewed	102	28.56	174	48.72	98	27.44	170	47.60
2 side, 3 intermediate and 2 center sills, renewed	108	30.24	192	53.76	105	29.40	189	52.92
2 side, 4 intermediate and 2 center sills, renewed	114	31.92	210	58.80	112	31.36	208	58.24

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	Present Prices.				Recommended Prices.			
	Ordinary Cars.		Refrigerator Cars.		Ordinary Cars.		Refrigerator Cars.	
	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.	Hours.	Charge for Labor.
1 center sill, spliced, when intermediate or side sills have to be renewed	10	$2.80	13	$3.64	12	$3.36	16	$4.48
Stakes, end or side, on gondola cars, applied, each	2	.56						
Change to Read: Stakes, end or side, on gondola cars, each, renewed					2	.56		
Stake pocket, blacksmith labor repairing	¼	.07						
Change to Read: Stake pocket, blacksmith labor repairing, including R. and R.					¾	.21		
Stake pocket "U" bolt, blacksmith labor repairing	¼	.07						
Change to Read: Stake pocket "U" bolt, blacksmith labor repairing, including R. and R.					½	.14		
Strap or anchor bolt, blacksmith labor repairing	½	.14	½	.14				
Change to Read: Strap or anchor bolt, blacksmith labor repairing, including R. and R.					1¼	.35	1¼	.35
Striking plate, blacksmith labor repairing	½	.14	½	.14				
Change to Read: Striking plate, blacksmith labor repairing, including R. and R.					1½	.42	1½	.42
Truck hanger, blacksmith labor repairing	1½	.42	1½	.42				
Change to Read: Truck hanger, blacksmith labor repairing, including R. and R.					5	1.40	5	1.40
New Item: Truck hanger, each additional, in same truck, blacksmith labor repairing					2	.56	2	.56

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Truck hanger pin, blacksmith labor repairing	½	.14	½	.14				
CHANGE TO READ: Truck hanger pin, blacksmith labor repairing, including R. and R.					2½	.70	2½	.70
Truck spring, replacing, one or cluster, when out of place, loaded car								
One end of bolster	1½	.42	1½	.42				
At both ends of bolster	2	.56	2	.56				
CHANGE TO READ: Truck spring, replacing, one or cluster, when out of place, both loaded and empty car					¾	.21	¾	.21
Truck transoms, 2, wood, replacing, in same truck	12	3.36	12	3.36				
CHANGE TO READ: Truck transoms, 2, wood, renewed, in same truck					12	3.36	12	3.36
Truck truss rod, center, 1, renewed	10	2.80	10	2.80	9	2.52	9	2.52
Truck truss rod, blacksmith labor repairing	1	.28	1	.28				
CHANGE TO READ: Truck truss rod, outside, blacksmith labor repairing, including R. and R.					3	.84	3	.84
NEW ITEM: Truck truss rod, center, blacksmith labor repairing, including R. and R.					10	2.80	10	2.80
Truss rod, body bolster, blacksmith labor repairing	1	.28	1	.28				
CHANGE TO READ: Truss rod, body bolster, blacksmith labor repairing, including R. and R.					2½	.70	2½	.70

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PRESENT PRICES.

Repairs of Steel or Steel Parts of Composite Cars.

All rivets ½-inch diameter or over, 14 cents net per rivet, which covers removal and replacing of rivets, including removing, fitting, punching or drilling holes when applying patches or splicing and replacing damaged parts, not to include straightening.

All rivets ¼-inch diameter and less than ½-inch diameter, 8 cents net per rivet, which covers removal and replacing of rivets, including removing, fitting, punching or drilling holes when applying patches or splices and replacing damaged parts, not to include straightening.

Straightening or repairing parts removed from damaged car, 60 cents per 100 pounds.

Straightening or repairing parts in place on damaged car; also any part that requires straightening, repairing or renewing, not included on rivet basis, 28 cents per hour.

Repairs of steel tanks of tank cars:

Labor, repairing and testing, per hour	$0.40
Steaming, per tank	.75
Water for testing, per 1,000 gallons	.06

In making repairs to cars on rivet basis, the cost of removing and replacing fixtures not secured by rivets, but necessarily removed in order to repair or renew adjacent defective parts, should be in addition to the rivet basis; rules covering wood-car repairs to govern.

RECOMMENDED PRICES.

Repairs of Steel or Steel Parts of Composite Cars.

All rivets ½-inch diameter or over, 14 cents net per rivet, which covers removal and replacing of rivets, including removing, fitting, punching or drilling holes when applying patches or splicing and replacing damaged parts, not to include straightening.

All rivets ¼-inch diameter and less than ½-inch diameter, 8 cents net per rivet, which covers removal and replacing of rivets, including removing, fitting, punching or drilling holes when applying patches or splices and replacing damaged parts, not to include straightening.

Straightening or repairing parts removed from damaged car, 60 cents per 100 pounds.

Straightening or repairing parts in place on damaged car; also any part that requires straightening, repairing or renewing, not included on rivet basis, 28 cents per hour.

Repairs of steel tanks of tank cars:

Labor, repairing and testing, per hour	$0.40
Steaming, per tank	.75
Water for testing, per 1,000 gallons	.06

In making repairs to cars on rivet basis, the cost of removing and replacing

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fixtures not secured by rivets, but necessarily removed in order to repair or renew adjacent defective parts, should be in addition to the rivet basis; rules covering wood-car repairs to govern.

NEW PARAGRAPH.—Dismantling wood constructed cars, including trucks and all work necessary including handling, assorting and weighing scrap.

Box, stock and other house cars, except refrigerators	$10.00
Flat car	6.50
Gondola or hopper car, having sides over 36 inches	9.00
Gondola or hopper car, having sides 36 inches and under	8.00
Refrigerator	12.00

PRESENT PRICES.

RULE 116.—The settlement prices of new eight-wheel cars shall be as follows, with an addition of $27.50 for each car equipped with 8-inch air brake equipment, and $35 for 10-inch air brake equipment. The road destroying a car with air brakes may elect to return the air-brake apparatus, including such attachments as are usually furnished by the air-brake manufacturer complete and in good condition:

BODIES OF 8-WHEEL CARS—WOOD.	PRESENT PRICES.	RECOMMENDED PRICES.
NEW ITEM: Box, ventilated, 32 feet long, but under 34 feet	.....	$350.00

BODIES OF 8-WHEEL CARS—STEEL.	PRESENT PRICES.	RECOMMENDED PRICES.
Box, wooden body, metal underframe, less than 50 tons capacity, 36 feet long or over, over end sills	$740.00	.....
CHANGE TO READ: Box, wooden body, metal underframe, 50 tons capacity and less, 36 feet long or over, over end sills	.....	740.00
Box, wooden body, metal underframe, 40 tons capacity and over, 36 feet long, over end sills	750.00	.....
CHANGE TO READ: Box, wooden body, metal underframe, 40 tons capacity, 36 feet long and over, over end sills	.....	730.00

For trucks with steel or steel-tired wheels, an additional allowance of $112.00 per car shall be made.

CHANGE TO READ:

For trucks with steel or steel-tired wheels, an additional allowance of $84.00 per car shall be made.

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LIST OF PRICES FOR MAINTENANCE OF PASSENGER EQUIPMENT IN INTERCHANGE.

Material.	Present Prices.		Recommended Prices.	
	Charge.	Credit.	Charge.	Credit.
Air brake hose, M. C. B. Standard, 1¾ inches, complete, with fittings, applied to car	$2.00	$0.80	.....	.....
Change to Read: Air brake hose, M. C. B. Standard, 1¾ inches complete, with fittings, renewed	.....	.....	$2.00	$0.60
Air signal, complete with fittings, applied to car	1.75	.80	.....	.....
Change to Read: Air signal hose, complete, with fittings, renewed	.....	.....	1.75	.60
Bell or signal cord and couplings, per car	.75	.....	.....	.....
Change to Read: Bell or signal cord and couplings, renewed, per car	.....	.....	.75	.....
Bowls, gas	At cost	.....	.....	.....
Change to Read: Bowls, gas, renewed	.....	.....	At cost	.....
Brake shoes, reinforced, applied, each	.50	.....	.....	.....
Change to Read: Brake shoes, reinforced, renewed, each	.....	.....	.50	.....
Bulbs, gas	At cost	.....	.....	.....
Change to Read: Bulbs, gas, renewed	.....	.....	At cost	.....
Burners, dual wick, each	.30	.....	.....	.....
Change to Read: Burners, dual wick, renewed, each	.....	.....	.30	.....
Burners, round wick, each	.50	.....	.....	.....
Change to Read: Burners, round wick, renewed, each	.....	.....	.50	.....
Chimneys, dual wick, each	.06	.....	.....	.....
Change to Read: Chimneys, dual wick, renewed, each	.....	.....	.06	.....
Chimneys, round wick, each	.11	.....	.....	.....
Change to Read: Chimneys, round wick, renewed, each	.....	.....	.11	.....
New Item: Drinking-water container, cleaning and steaming, including R. and R., each	.....	.....	.10	.....
Domes, gas, each	.50	.....	.....	.....
Change to Read: Domes, gas, renewed, each	.....	.....	.50	.....
Gas tips	At cost	.....	.....	.....
Change to Read: Gas tips, renewed, each	.....	.....	At cost	.....
Gas mantels	.40	.....	.....	.....

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Material.	Present Prices.		Recommended Prices	
	Charge.	Credit.	Charge.	Credit.
Change to Read: Gas mantels, renewed, each	.....	.....	$0.40	.....
Glass, per light	At cost	.....	.....	.....
Change to Read: Glass, renewed, per light	.....	.....	At cost	.....
Globes, gas	At cost	.....	.....	.....
Change to Read: Globes, gas, renewed, each	.....	.....	At cost	.....
Hose, 1½ inches straight port, steam, complete with fittings, applied to car	6.50	.....	.....	.....
Change to Read: Hose, 1½ inches straight port, steam, complete with fittings, renewed	.....	.....	5.00	.....
Hose, as above, 1½ inches	6.50	.....	5.00	.....
Hose, as above, 1 inch	5.00	.....	4.00	.....
Hose, as above, 1½ inches and 1½ inches, credit for fittngs	.....	5.25	.....	$2.50
Hose, as above, 1 inch, credit for fittings	.....	4.00	.....	2.00
Journal bearings, brass or bronze, lined or unlined, per lb., applied	.18	.13	.....	.....
Change to Read: Journal bearings, brass or bronze, lined or unlined, per lb., renewed	.....	.....	.18	.12
Journal bearings, filled brass or bronze shell, per lb., applied	.14	.10	.....	.....
Change to Read: Journal bearings, filled brass or bronze shell, per lb., renewed	.....	.....	.14	.12
Lumber (oak, pine, hickory, poplar and elm), per foot	.06	.....	.....	.....
Change to Read: Lumber (oak, pine, hickory, poplar and elm), per ft., B. M.	.....	.....	.06	.....
Shades, Acme lamp, each	.45	.....	.....	.....
Change to Read: Shades, Acme lamp, renewed, each	.....	.....	.45	.....
Shades, common lamp, each	.25	.....	.....	.....
Change to Read: Shades, common lamp, renewed, each	.....	.....	.25	.....
Waste, woolen, per lb	.125	.....	.....	.....
Change to Read: Waste, woolen, per lb., renewed	.....	.....	.125	.....
Waste, cotton, per lb	.06	.....	.....	.....
Change to Read: Waste, cotton, per lb., renewed	.....	.....	.06	.....
Wicks, dual, each	.005	.....	.....	.....
Change to Read: Wicks, dual, renewed, each	.....	.....	.005	.....

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Material.	Present Prices.		Recommended Prices.	
	Charge.	Credit.	Charge.	Credit.
Wicks, round, each	$0.02			
Change to Read: Wicks, round, renewed, each			$0.02	
Wheels, labor changing, per pair	2.35			
Change to Read: Wheels, labor changing, first pair, per pair			4.00	
New Item: For each additional pair in same truck, per pair			1.00	
Wheels, steel or steel-tired, loss of metal from, per 1-16 inch	1.50			
Change to Read: Wheels, steel or steel-tired, loss of metal from, per 1-16 inch on radius of tread			1.50	
Wheels, steel-tired, turning, per pair	1.75			
Change to Read: Wheels, steel or steel-tired, turning, per pair			1.75	
Wheels, cast, 36-inch	10.50	5.25		
Change to Read: Wheels, cast, 36-inch, each			10.50	5.25
Wheel, cast, 33-inch	9.00	4.75		
Change to Read: Wheels, cast, 33-inch, each			9.00	4.75

Mr. F. H. Clark, Chairman.

Mr. C. E. Carson,
D. M. C. B., N. Y. C. & H. R. R. R. Co.,
West Albany, N. Y.

Mr. C. F. Theile, G. C. I.,
P. C. C. & St. L. R. R. Co., Columbus, Ohio.

Mr. Ira Everett, F. C. R.,
Lehigh Valley R. R., Sayre, Pa.

Mr. H. H. Harvey, G. C. F.,
C. B. & Q. R. R. Co., Chicago, Ill.

Mr. C. F. Giles, S. M.,
L. & N. R. R., Louisville, Ky.

Mr. C. U. Swanson, S. C. S.,
A. T. & S. F. Ry., Topeka, Kan.

Committee.

Chairman Crawford: Gentlemen, this report has been printed and distributed to you, and one of the members of the committee has briefed it for you; it is now open for discussion.

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I will be glad to hear from any of the members who have anything to say.

MR. FULLER: I move you, Mr. Chairman, that the report of the Committee on Prices for Labor and Material be accepted.

Motion seconded by Mr. MacBain.

CHAIRMAN CRAWFORD: Do I understand, Mr. Fuller, that your motion is to accept the report for discussion or to accept and approve the report?

MR. FULLER: My motion is to accept and approve the report.

CHAIRMAN CRAWFORD: Is that the idea of the seconder of Mr. Fuller's motion?

MR. MACBAIN: Yes, sir.

CHAIRMAN CRAWFORD: Gentlemen, you have heard the motion made by Mr. Fuller; I will be glad to hear any discussion on that motion.

MR. F. M. GRAFF (Erie R. R.): The convention has already approved the report of the Arbitration Committee, which did not make any reference to a matter which was brought to their attention at too late a date by our company to be incorporated in their printed report, and that was to change Rule No. 116, with respect to the prices of metal center sills and continuous draft members. Instead of making the price depend upon the depth, we proposed to substitute section modulus. We are not presuming to press the matter at this time, for we had our day in court and slept on our rights, but we would like to bring it to the attention of the Association. We feel that the sectional area should determine the price rather than the depth, and, frankly, we have a particular interest since we are equipping 1,800 cars with continuous draft members, 9 in. in depth, weighing 35 lb. to the foot. Assuming that the suggestion of President Barnum, to appoint a special committee to consider extra allowances for the improvements now being made to wooden underframe cars, is acted upon it is probable that the point we raise would receive what attention it merited, but we regard the matter of enough importance to bring it to the attention of the Association in this way, since we failed, by our belated action, to have it presented through the Arbitration Committee. We were so busily engaged

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answering inquiries of the Interstate Commerce Commission at that time that we did not get around to the comparatively minor affairs of the Association [laughter], but we would like at least to have an expression of opinion on the subject, and if possible some action which will predicate the price of continuous draft members and metal center sills on the basis of their real value rather than upon an arbitrary designation of depth.

MR. HENNESSEY: That is the first I have heard of that suggestion. It was covered in the President's address this morning, and he considered that there should be a special committee appointed for that purpose to report next year. I think it is too late to decide it at this convention. It was never presented to the Arbitration Committee, but I am certainly in accord with the idea that a committee be appointed.

MR. GRAFF: I would just say, Mr. Chairman, that is entirely satisfactory to us, but we wished to be sure. It was our understanding this morning that the action suggested would cover the question, but we did not care to have our case go by default.

CHAIRMAN CRAWFORD: I think I can assure you, Mr. Graff, that the subject will receive the attention of the incoming Executive Committee, it having been brought into the proceedings of the Association at this time.

MR. GAINES: While we are on that subject, I think I would like to have the incoming Executive Committee consider, as well, the reinforcing of cars with continuous steel center sills; also, the reinforcing of old wooden equipment with steel draft arms that extend beyond the bolster. Quite a number of us are spending a good deal of money to put in the steel draft arms instead of using the continuous metal sills and there is no price allowed for this item whatever, and I think it should be considered by them and an additional allowance made for cars so equipped.

MR. GEORGE F. LAUGHLIN (Armour Car Lines): In line with the remarks made by the preceding gentlemen, I would like to suggest to the committee that they also consider the suggestion contained in the President's address this morning, to the effect that cars which are thoroughly rebuilt, allowance should be made for this rebuilding in depreciating them when they are destroyed.

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CHAIRMAN CRAWFORD: I think that I can assure you all that suggestions of that kind which are entered on our minutes will receive the consideration of the Executive Committee. Is there any further discussion on the report of the Price Committee? Gentlemen, the report is still open for discussion. If there is no further discussion, shall I put the question?

(Question called for.)

CHAIRMAN CRAWFORD: As many as are in favor of accepting and approving the report of our Price Committee, will please signify by saying "aye"; contrary, "no." It is a vote.

Is there any further business, Mr. Secretary, to come before this meeting?

THE SECRETARY: Mr. Chairman, we have disposed of the reports very rapidly. I had not arranged for anything more this afternoon.

MR. FULLER: I move we adjourn.

Seconded.

CHAIRMAN CRAWFORD: It has been moved and seconded that we adjourn. If there is no objection, the meeting will stand adjourned.

Adjourned.

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THIRD SESSION.

THURSDAY, JUNE 11, 1914.

President Barnum called the meeting to order at 9:40 o'clock A.M.

THE PRESIDENT: We have allowed a little delay in time of opening the meeting this morning, for the variation in watches, as the saying goes. We will now proceed to the meeting. The first business will be a report of the Certified Public Accountants, who have examined the books of the Secretary.

The Secretary read the report as follows:

REPORT OF THE CERTIFIED PUBLIC ACCOUNTANTS.

To the Members of the Master Car Builders' Association:

GENTLEMEN,—We hereby certify that we have checked the footings of the cash books kept by Mr. Joseph W. Taylor, Secretary, for the year ending June 6, 1914; vouched all disbursements and audited the bank account of the Association, all of which we found correct and in good order.

Yours respectfully,
BARROW, WADE, GUTHRIE & CO.

On motion, the report was accepted.

THE PRESIDENT: We will now take up the first report for this session, that of the Committee on Coupler and Draft Equipment, Mr. R. L. Kleine, Penna. R. R., chairman.

Mr. Kleine presented the report of the committee in abstract.

REPORT OF STANDING COMMITTEE ON COUPLER AND DRAFT EQUIPMENT.

To the Members:

(1) Your committee last year reported in more or less detail the progress of the work of designing the standard coupler, giving the results comparatively and individually of the series of static, dynamic and road service tests on couplers in present general use and of several types of couplers of increased weight and strength in the development stage, the latter having been termed "Experimental." The comparisons and summaries in all the tests showed conclusively that the experimental couplers

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were much stronger throughout than present types of couplers and that your committee is working along the right lines.

(2) As instructed by the Association, this work has been conducted jointly with the coupler manufacturers. Your committee made the exhaustive tests above mentioned and investigated coupler conditions throughout the country, gathering data on the gage and breakage of couplers in service, efficiency of knuckle throwers and lock sets, slack in couplers, etc., and with this information at hand, augmented by our past experience and knowledge on couplers, the coupler manufacturers were invited to send their mechanical representatives into conference with your committee to jointly take up the design of the standard M. C. B. coupler and to go over the data accumulated as a basis for design.

(3) This joint committee accordingly held numerous meetings to discuss and decide upon details and fundamentals of design, such as operation, contour lines, strength of the various parts, dimensions of knuckle hub and knuckle-pin hole, location of knuckle-pin hole and lock set, height of coupler head, size of shank and type of knuckle thrower, etc. Considerable discussion ensued on these points which are very pertinent to design, each one influencing the other to such an extent that full development or perfection of any one will handicap one or more of the others.

(4) The harmonizing of ideas between your committee and the mechanical representatives of the coupler manufacturers, who have practically devoted their whole life to coupler design, and each previously working along different lines, was gradually accomplished in many of the details. In this manner each point was thoroughly thrashed out in the conferences and a set of specifications on fundamentals, principles and details of design was gradually worked up and adopted jointly as being necessary and desirable to be incorporated in the standard M. C. B. coupler. These specifications on design, including the evolution of the principles involved as well as the data recorded in this connection, were presented to the 1913 convention by including in report of last year the minutes of the various joint meetings, which not only demonstrates the importance of the fundamentals of coupler design, but serves as a permanent record giving the reasons for the conclusions reached.

(5) As these specifications were being developed, the coupler manufacturers submitted to your committee at the various meetings full-size wooden and steel models, illustrating their ideas of the specifications as then laid down, and these were in turn discussed with the idea of harmonizing the designs and reducing them to a common basis.

(6) After agreeing upon the few points still at issue which completed the specifications and deciding upon the contour lines which should be tried out in service, the coupler manufacturers, immediately prior to the 1913 convention, each submitted one or more designs of couplers embodying the specifications as laid down by the joint committee, the manufacturers having designed the working parts according to their ideas to meet these specifications.

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(7) These designs of couplers were exhibited by your committee at the convention last year with the statement that several designs would be selected from these couplers to be tried out in service during the coming year to definitely determine the best contour lines, efficiency of operation and strength of the various parts, with a view of correcting any details that may prove unsatisfactory, to the end of establishing the standard coupler. The members of the Association were invited to make a critical examination of the couplers in the exhibit and give the committee the benefit of their criticisms and recommendations.

COUPLER TESTS — STATIC AND ROAD SERVICE.

STATIC TESTS (Pb).

(8) While the convention was in session last year, a series of static pulling tests consisting of two couplers of each design submitted by the coupler manufacturers and exhibited by your committee was instituted at Altoona shops, Pennsylvania Railroad Company, under the direct supervision of Mr. C. D. Young, Engineer of Tests. (See Exhibit No. 2.)

(9) The pulling tests on these couplers were made in the same manner as those reported on last year, viz., by laying the couplers off as per Exhibit No. 1 and measuring both deflection and permanent set after each increment of load and tabulating the distortions by so much plus or minus from the original dimensions.

(10) The results of all the individual tests were plotted graphically (see Exhibits Nos. 3 to 10, inclusive, and 14 to 21, inclusive) and, taking the coupler giving the higher ultimate and the one giving the lower ultimate of each two furnished by each manufacturer and grouping them, comparative summaries of the important dimensions C, H and E in the tests of both groups were also plotted (see Exhibits 11, 12 and 13 for the high ultimates and 22, 23 and 24 for the low ultimates).

ANALYSIS OF RESULTS OF PULLING TESTS.

(11) The following table gives a comparison in figures of permanent set at "C" (knuckle opening) and "E" (knuckle stretch). These couplers were built to cover the same specifications and were hence considerably reduced to a common basis, and even though they were built in somewhat of a hurry, made from wooden patterns and without time for sufficient experimenting for molding purposes, the results were very good, as will readily be seen from a study of the table.

NOTE.— Exhibits Nos. 2 to 24, inclusive, are given under the Appendix.

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PULLING TESTS OF COUPLERS EXHIBITED AT 1913 CONVENTION BY M. C. B. COMMITTEE — COMPARISON OF PERMANENT SET AT "C" (KNUCKLE OPENING) AND "E" (KNUCKLE STRETCH).

Present standard M. C. B. pulling test is 150,000 lb. pull with limit knuckle opening of (C) 0.625 in.

Test Shown on Exhibit No.	Coupler.	Permanent Set "C" Inches.									Permanent Set "E," Inches At			Ultimate Pounds.	Weight Pounds.	Pounds. Ultimate Per lb. Weight.
		At 200,000 Lbs.			At 300,000 Lbs.			At 400,000 Lbs.			150,000 Pounds.	175,000 Pounds.	200,000 Pounds.			
		Top.	Bottom.	Average.	Top.	Bottom.	Average.	Top.	Bottom.	Average.						
3	Tc	.013	.005	.009	.067	.038	.052	.145	.167	.156	0	0	.005	545 000	480	1 135
14	Tc	.026	.066	.046	.078	.126	.102	.226	.297	.261	0	0	0	531 440	468	1 136
4	Td	.171	.213	.192	.121	.121	.121	.203	.207	.205	0	0	.008	620 000	517	1 199
15	Td	0	0	0	.043	.068	.055	.249	.238	.243	0	0	0	531 200	506	1 050
5	Uc	.150	.116	.133	.399	.335	.367	.....	.....	.....	.009	.014	.021	388 600	448	867
16	Uc	.236	.202	.219	.641	.583	.612	.....	.....	.....	.015	.030	.055	355 720	449	792
6	Vb	.117	.121	.119	.427	.562	.494	.....	.....	.....	0	.010	.030	345 940	473	731
17	Vb	.083	.200	.141	.486	.858	.672	.....	.....	.....	.015	.033	.050	319 480	460	695
7	Wb	.049	.082	.065	.212	.209	.210	.726	.642	.684	0	0	0	451 020	480	940
18	Wc	.147	.170	.158	.447	.401	.424	1.257	1.133	1.195	0	.011	.062	423 320	483	876
8	Xc	.106	.043	.074	.210	.126	.168	.468	.357	.412	0	.001	.011	465 130	416	1 118
19	Xd	.137	.132	.134	.245	.175	.210	.483	.411	.447	0	0	0	449 800	425	1 058
9	Ye	.037	.038	.037	.119	.117	.118	.300	.306	.303	0	0	0	495 220	467	1 060
20	Ye	.029	.040	.034	.186	.191	.188	.561	.667	.614	0	0	.007	460 130	473	973
10	Yf	.021	.003	.012	.190	.165	.177	.428	.442	.435	0	0	.006	531 660	448	1 187
21	Yf	.135	.087	.111	.240	.215	.227	.652	.583	.617	0	0	.014	437 440	453	966
Average	.....	.091	.095	.093	.257	.268	.262	.475	.454	.464	.0024	.0081	.022	459 444	465	988

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(13) Comparing the permanent set of the knuckle ("E" dimension) in these complete pulling tests of the specification couplers with the same dimension in the pulling tests of the separate knuckles of present couplers, as reported on last year (page 133, 1913 Proceedings), the superiority of the specification knuckle will be noted:

Coupler.	Permanent Set at 150 000 Lbs. Load (Average top and bottom "E" inches).	Ultimate Load.	
		Pounds.	Did Knuckle Break.
Present.			
Ta	.035	280 000	Yes
Ua	.075	253 860	Yes
Wa	.299	278 310	Yes
Xa	.261	260 000	Yes
Xb	.159	291 850	No
Ya	.365	300 000	Yes
Yc	.278	233 570	No
Average	.210	271 084	
Committee Specification.			
Tc	0	545 000	No
Tc	0	531 440	Yes
Td	0	620 000	No
Td	0	531 200	No
Uc	.009	388 600	No
Uc	.015	355 720	Yes
Vb	0	345 940	No
Vb	.015	319 480	No
Wb	0	451 020	Yes
Wc	0	423 320	Yes
Xc	0	465 130	No
Xd	0	449 800	Yes
Ye	0	495 220	Yes
Ye	0	460 130	Yes
Yf	0	531 660	Yes
Yf	0	437 440	No
Average	.0024	459 444	
Increase		69.5%	
Decerease	98.9%		

(See Exhibits Nos. 2 to 24, inclusive.)

(14) The comparison of the averages in the above tables are conclusive and decidedly in favor of the specification couplers in every respect, irrespective of the fact that the latter were of larger size shank, made from wooden patterns, and had not yet gone through the necessary foundry experiments and trimming of superfluous metal.

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(12) The following table is a co
similar tests of present couplers in
sons show a decided decrease in per
(See Exhibits Nos. 2 to 24, inclu

Couplers.	Weight Complete Pounds.	AV	
		Permanent S (Knuckle O at 150,000 Lb	
		Total.	
PRESENT.			
Ta	280	.252	
Ua	312	.282	
Wa	300	.292	
Xa	284	.302	
Xb	264	.371	
Ya	302	.283	
Yc	300	.352	
Average	292	.305	
COMMITTEE SPECIFICATION.			
Tc	480	.019	
Tc	468	.037	
Tb	517	.192	
Tb	506	.026	
Uc	448	.092	
Uc	449	.115	
Vb	473	.032	
Vb	460	.096	
Wb	480	.034	
Wc	483	.076	
Xc	416	.058	
Xd	425	.077	
Ye	467	.047	
Ye	473	.081	
Yf	448	0	
Yf	453	.049	
Average	465	.0644	
Increase			
Decrease		78.9%	

NOTE.— All the present type couple
specification couplers were 6 by 8 in.
foundry practice.

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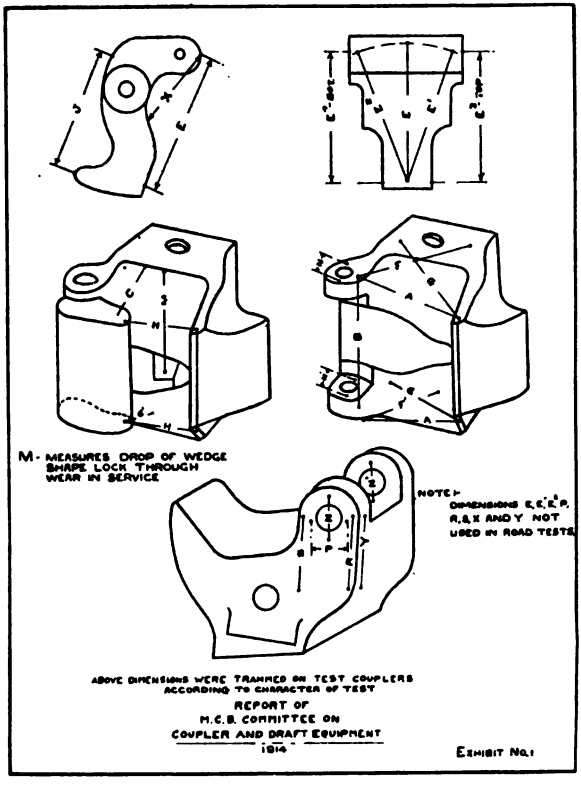
ROAD TESTS.

(15) The road-service tests of couplers, reported on last year (pages 140 to 153, 1913 Proceedings), were continued and are herein given with results up to date of writing the report. As in all tests, each coupler was given a letter designation by your committee to represent the name or type of the coupler tested, as well as the manufacturer. Couplers Ta, Ua, Wa, Xa, Ya and Yc represent couplers of the latest types in general service, such as Pitt, Sharon, Major, Simplex, Latrobe and Gould "Z,"


M- MEASURES DROP OF WEDGE SHAPE LOCK THROUGH WEAR IN SERVICE
NOTE:- DIMENSIONS E, E', E'', P, R, S, X AND Y NOT USED IN ROAD TESTS
ABOVE DIMENSIONS WERE TRAMMED ON TEST COUPLERS ACCORDING TO CHARACTER OF TEST
REPORT OF M.C.B. COMMITTEE ON COUPLER AND DRAFT EQUIPMENT
1914
EXHIBIT No. 1

irrespectively, and couplers Tb, Xe, Yb, Yd, Yda and Ydb represent couplers of increased weight and strength in the development stage, termed "Experimental," a number of each of which were placed in service experimentally.

(16) These road-service tests were conducted with couplers of present type on freight cars and with couplers of both present and the experimental design on freight locomotive tenders on the Pennsylvania Railroad. The freight-car couplers were applied to 100,000 lb. capacity

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steel hopper cars in the coal trade between the bituminous mines in western Pennsylvania and tide-water, a service comprising grade and flat country as well as hump-yard classification. The tender couplers were applied to 7000 gal. steel tenders in general heavy freight service on the Western Pennsylvania Division, between Altoona and Pittsburgh, which includes heavy grade service.

(17) These couplers were also laid off as per Exhibit 1, the bar and parts stenciled and plate labeled, inspected and measured once every month to determine their operation and ability to withstand service, and thus draw comparisons between the static and dynamic tests with road-service tests.

(18) The road tests of couplers on tenders in freight service develop in the shortest space of time the defects as well as the relative life of couplers; this is brought out very prominently by referring to the following logs of these tests, and it is surprising to note the short life of couplers of the present type in this service, as well as the relatively longer life that is being obtained from the experimental couplers. The following couplers were tested:

Freight Tender Couplers:

3 Xa couplers (present type), applied July, 1912.

2 Xa couplers (present type), applied 3-26-13 and 4-3-13, respectively, to replace above Xa couplers removed.

3 Ya couplers (present type), applied July, 1912.

12 Tb couplers (experimental type), applied July, 1912.

6 Yb couplers (experimental type), applied August, 1912.

6 Yb couplers (experimental type), applied November, 1912.

6 Yd couplers (experimental type), applied August, 1912.

6 Yda couplers (experimental type), applied June, 1913.

6 Ydb couplers (experimental type), applied June, 1913.

1 Xe coupler (experimental type), applied February 21, 1913.

Freight Car Couplers:

2 Ta couplers (present type), applied July 28, 1912.

2 Ua couplers (present type), applied July 28, 1912.

2 Wa couplers (present type), applied July 28, 1912.

2 Xa couplers (present type), applied July 28, 1912.

2 Ya couplers (present type), applied July 28, 1912.

2 Yc couplers (present type), applied July 28, 1912.

In the report of these tests we have included the complete log of one coupler of each group of both tender and car couplers, and also a brief résumé of all the couplers in the tests.

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(19) Xa TENDER COUPLER (PRESENT TYPE).— Three applied, July, 1912. Test Bars Nos. 660, 661, 662. Two additional applied March 26, 1913, and April 3, 1913; Test Bars Nos. 698 and 699, respectively. These two couplers replaced above three Xa couplers, as they were removed for various causes.

Xa TENDER COUPLER.

Test Bar No. 698.— Applied, 3-26-13.

DATE.	DIMENSION LETTER.	A	A^1	B	C	C^1	H	H^1	G	G^1	F	F^1	J	E^3	E^4	GAGE.	
3-26-13	Original dimension—inches.....	10	10	10	4½	4	6	6	10	10	10	10	8	8	8	Top.	Bottom.
4-17-13	Set—plus or minus—inches.....	0	0	+.01	+.22	+.22	+.13	+.20	0	0	0	0	0	−.01	−.01	.....	.....
5-20-13	Set—plus or minus—inches.....	+.01	+.02	+.01	+.33	+.27	+.21	+.24	0	+.03	0	0	0	−.03	−.03	.....	.....
6-20-13	Set—plus or minus—inches.....	+.01	+.02	+.02	+.34	+.26	+.20	+.21	+.01	+.03	0	0	Point Lost	−.03	−.03	4 11/16	4 11/16
7-15-13	Set—plus or minus—inches.....	+.02	+.02	+.02	+.34	+.27	+.19	+.22	+.01	+.03	0	0	.....	−.03	−.03	4 11/16	4 11/16
8-18-13	Set—plus or minus—inches.....	+.02	+.02	+.02	+.34	+.26	+.18	+.17	+.02	+.03	−.01	−.01	.....	−.04	−.03	4 11/16	4 11/16
9- 5-13	Set—plus or minus—inches.....	+.03	+.03	+.02	+.36	+.26	+.20	+.25	+.03	+.03	−.01	−.01	.....	−.04	−.03	5	5
11- 3-13	Set—plus or minus—inches.....	+.03	+.04	+.02	+.37	+.26	+.25	+.19	+.03	+.05	−.04	0	.....	−.05	−.03	5 1/16	4 11/16
12-31-13	Set—plus or minus—inches.....	+.05	+.04	+.03	0	0	0	0	+.03	+.07	−.07	+.01	0	0	0	5 1/16	5 1/16
1- 7-14	Set—plus or minus—inches.....	+.14	+.06	+.01	−.22	−.21	+.09	−.23	+.28	+.12	−.26	−.02	0	−.03	−.03	4 11/16	4 11/16

Lock found broken and knuckle pin bent, 11-3-13; renewed same date. Original knuckle found missing and new knuckle laid off, 12-31-13. This coupler was damaged in regular service and removed, 1-6-14.

Test Bar No. 660.— Applied, July, 1912.

New knuckle, lock and pin applied, 10-27-12, account of gage to limit.

Removed, 2-20-13, account gage again to limit.

Test Bar No. 661.— Applied, July, 1912. (Measurements except final given in full last year.)

New knuckle and pin applied, 6-23-13, account of gage to limit.

Coupler removed, 7-22-13, account of gage again to limit.

Test Bar No. 662.— Applied, July, 1912.

New pivot pin applied, 11-27-12, account gage to limit.

New knuckle applied, 1-21-13, account gage to limit.

Removed, 2-2-13, account broken in accident.

Test Bar No. 699.— Applied, 4-3-13.

New knuckle pin found applied, 5-6-13.

Top point of guard arm found bent out, 6-3-13.

New knuckle and lock applied, 7-13-13, account of gage to limit.

Coupler damaged and removed, 7-14-13.

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(20) Ya TENDER COUPLER (PRESENT TYPE).— Three applied, July, 1912. Test Bars Nos. 666, 667 and 668.

Ya TENDER COUPLER.

Test Bar No. 668.— Applied, July, 1912.

DATE.	DIMENSION LETTER.	A	A¹	C	C¹	H	H¹	G	G¹	F	F¹	E³	E⁴	GAGE.	
7- 5-12	Original dimension—inches	10	10	4	4	6	6	10	10	10	10	8½	8½	Top.	Bottom.
7-31-12	Set—plus or minus—inches	0	0	+.06	+.01	+.04	+.18	+.01	0	—.03	0	+.03	+.04	.....	.....
9- 9-12	Set—plus or minus—inches	+.02	0	+.25	+.24	+.27	+.41	+.03	0	—.04	0	+.21	+.31	.....	.....
10-14-12	Set—plus or minus—inches	+.02	+.02	+.25	+.28	+.33	+.42	+.03	+.02	—.04	0	+.15	+.26	.....	.....
11-11-12	Set—plus or minus—inches	+.03	+.03	+.26	+.30	+.30	+.44	+.07	+.02	—.04	0	+.15	+.26	.....	.....
12- 5-12	Set—plus or minus—inches	+.04	+.02	+.27	+.30	+.33	+.44	+.07	+.02	—.05	0	+.13	+.23	.....	.....
1- 8-13	Set—plus or minus—inches	+.06	+.02	+.30	+.33	+.34	+.45	+.07	+.02	—.05	0	+.13	+.24	.....	.....
2- 6-13	Set—plus or minus—inches	+.05	+.02	+.28	+.33	+.30	+.44	+.07	+.02	—.05	0	+.13	+.23	.....	.....
3- 5-13	Set—plus or minus—inches	+.05	+.02	+.29	+.34	+.33	+.44	+.07	+.03	—.05	—.01	+.13	+.23	.....	.....
4- 3-13	Set—plus or minus—inches	+.08	+.02	+.33	+.34	+.39	+.48	+.12	+.02	—.09	—.01	+.12	+.23	.....	.....
5- 2-13	Set—plus or minus—inches	+.30	+.03	+.05	+.05	+.07	+.06	+.27	+.03	—.11	—.01	0	0	.....	.....
6-14-13	Set—plus or minus—inches	+.30	+.02	+.05	.....	+.13	+.09	+.27	+.03	—.13	—.01	0	0	4¹¹/₁₆	4³³/₆₄
7- 2-13	Set—plus or minus—inches	+.31	+.02	+.07	+.11	+.14	+.07	+.29	+.03	—.13	—.01	0	0	4³³/₆₄	4¹⁷/₃₂
8- 4-13	Set—plus or minus—inches	+.32	+.02	+.23	+.31	+.31	+.23	+.30	+.03	—.13	—.02	+.15	+.13	5¹/₈	5¹/₈
9- 8-13	Set—plus or minus—inches	+.39	+.02	+.17	+.23	+.24	+.13	+.35	+.03	—.17	—.02	+.16	+.13	5	4¹³/₁₆
10- 2-13	Set—plus or minus—inches	+.37	+.02	+.25	+.29	+.30	+.17	+.36	+.03	—.19	—.02	+.16	+.13	5¹/₃₂	5¹/₃₂
11- 3-13	Set—plus or minus—inches	+.39	+.10	+.31	+.27	+.33	+.30	+.39	+.07	—.22	—.02	+.14	+.13	5¹/₈	5³/₃₂
1- 2-14	Set—plus or minus—inches	+.43	+.09	+.25	+.27	+.29	+.32	+.40	+.07	—.22	—.02	+.14	+.13	5¹/₃₂	5³/₃₂
2- 9-14	Set—plus or minus—inches	+.43	+.09	+.27	+.26	+.30	+.33	+.39	+.07	—.22	—.02	+.14	+.13	5¹/₃₂	5³/₃₂
3- 2-14	Set—plus or minus—inches	+.41	+.11	+.26	+.27	+.33	+.33	+.41	+.08	—.22	—.01	+.12	+.13	5³/₃₂	5¹⁷/₃₂
5- 1-14	Set—plus or minus—inches	+.40	+.11	0	0	0	0	+.41	+.08	—.22	—.02	0	0	4³³/₆₄	4¹⁷/₃₂

(Measurements prior to 5-2-13 were reported on last year.)

This coupler had knuckle and lock renewed, 4-7-13, account of gage to limit.

New lock and knuckle pin applied, 8-4-13, account of gage again to limit.

Lock link found twisted, 10-2-13. Second new knuckle found applied, 4-7-14.

5-1-14: Still in service, and the second new knuckle laid off.

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Test Bar No. 666.— Applied, July, 1912.
New pivot pin applied, 1-17-13, lost in shop.
Coupler out of service from 12-28-12 to 2-18-13, account of tender repairs.
New knuckle and pin applied, 4-14-13, account gage to limit.
Second new knuckle found applied, 8-14-13, and laid off same date.
Third new knuckle found applied, 9-2-13, and laid off same date.
Knuckle pin found broken, 12-16-13. New pin applied.
4-13-14: Still in service.

Test Bar No. 667.— Applied, July, 1912.
New knuckle, lock and pin applied, 11-8-12, account gage to limit.
New pin applied, 1-6-13, lost in shop.
New lock found applied, 8-14-13.
4-15-14: Still in service.

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(21) Tb TENDER COUPLER (EXPERIMENTAL TYPE).— Twelve applied, July, 1912. Test Bars Nos. 648 to 653, inclusive, and 684 to 689, inclusive. Detail monthly measurements taken only of first group of six, although all are examined monthly, and if any of the former group are removed from service for any cause, one of the latter is taken up and measured monthly. These couplers have standard diameter (1⅝ in.) knuckle pin and modified M. C. B. contour line, providing an increased diameter of knuckle hub.

Tb TENDER COUPLER.

Test Bar No. 648.— Applied, July, 1912.

DATE.	DIMENSION LETTER.	A	A¹	B	C	C¹	H	H¹	G	G¹	F	F¹	E³	E⁴	GAGE.	
7-23-12	Original dimensions—inches.....	10	10	11½	4½	4½	6	6	10	10	10	10	9	9	Top.	Bottom.
8-23-12	Set—plus or minus—inches.....	0	0	0	+.03	0	+.06	+.05	0	0	0	0	—.03	—.02	.....	.....
9-24-12	Set—plus or minus—inches.....	—.03	—.03	0	+.12	+.01	+.04	+.05	0	+.01	0	—.01	—.03	—.02	.....	.....
10-28-12	Set—plus or minus—inches.....	—.03	—.03	0	+.16	+.04	+.06	+.06	0	+.01	0	—.01	—.03	—.02	.....	.....
11-20-12	Set—plus or minus—inches.....	—.03	—.03	0	+.17	+.04	+.07	+.05	0	+.01	0	—.02	—.03	—.02	.....	.....
12-17-12	Set—plus or minus—inches.....	—.03	—.03	0	+.17	+.06	+.09	+.06	0	+.01	0	—.03	—.03	—.03	.....	.....
1- 9-13	Set—plus or minus—inches.....	—.03	—.03	0	+.14	+.02	+.06	+.06	0	+.01	0	—.03	—.06	—.05	.....	.....
2-17-13	Set—plus or minus—inches.....	—.03	—.03	0	+.13	+.06	+.04	+.06	0	+.01	0	—.03	—.07	—.05	.....	.....
3-19-13	Set—plus or minus—inches.....	—.03	—.03	0	+.18	+.07	+.09	+.07	0	+.02	0	—.05	—.07	—.05	.....	.....
4-16-13	Set—plus or minus—inches.....	—.03	—.03	0	+.17	+.06	+.08	+.07	0	+.02	—.01	—.05	—.07	—.05	.....	.....
5-14-13	Set—plus or minus—inches.....	—.03	—.03	0	+.19	+.08	+.06	+.09	0	+.02	—.01	—.05	—.07	—.05	.....	.....
6-23-13	Set—plus or minus—inches.....	—.01	—.01	0	+.19	+.06	+.08	+.11	+.03	+.03	—.01	—.04	—.07	—.05	4 11/16	4 11/16
7-28-13	Set—plus or minus—inches.....	—.01	—.01	0	+.18	+.09	+.13	+.11	+.03	+.05	—.01	—.04	—.07	—.05	4 11/16	4 11/16
8-15-13	Set—plus or minus—inches.....	—.01	—.01	0	+.17	+.06	+.13	+.11	+.04	+.05	—.01	—.04	—.07	—.05	4 11/16	4 11/16
9-12-13	Set—plus or minus—inches.....	0	0	0	+.17	+.09	+.13	+.10	+.06	+.05	—.01	—.04	—.07	—.05	4 11/16	4 11/16
10-13-13	Set—plus or minus—inches.....	0	0	0	+.26	+.13	+.14	+.16	+.03	+.05	0	—.05	—.07	—.05	4 11/16	4 11/16
11-19-13	Set—plus or minus—inches.....	0	0	0	+.24	+.13	+.13	+.16	+.03	+.05	0	—.05	—.07	—.05	4 11/16	4 11/16
1- 5-14	Set—plus or minus—inches.....	+.02	0	0	+.18	+.09	+.10	+.13	+.06	+.06	0	—.04	—.07	—.06	4 11/16	4 11/16
2- 7-14	Set—plus or minus—inches.....	+.02	0	0	+.20	+.12	+.13	+.16	+.06	+.06	0	—.04	—.07	—.05	4 11/16	4 11/16
3-13-14	Set—plus or minus—inches.....	+.01	+.01	—.02	+.23	+.11	+.13	+.15	+.07	+.05	—.01	—.04	—.10	—.05	4 11/16	4 11/16
4-14-14	Set—plus or minus—inches.....	+.01	+.01	—.02	+.24	+.11	+.17	+.19	+.07	+.07	—.01	—.04	—.10	—.05	4 11/16	4 11/16

(Measurements prior to 5-14-13 were reported last year.)

Coupler pulled out, 12-15-13, due to broken yoke; recovered and again applied, 1-29-14.

4-14-14: Still in service, no repairs required to date.

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Test Bar No. 649.— Applied, July, 1912.
Lock lifter found broken, 1-20-13, lock and lifter renewed.
Coupler was found missing, 9-2-13. All efforts to locate have been without results.

Test Bar No. 650.— Applied, July, 1912.
4-17-14: No repairs required to date and still in service.

Test Bar No. 651.— Applied, July, 1912.
Top of guard arm found damaged, 10-26-12.
Original knuckle pin found missing 5-23-13, probably lost while in shop.
4-23-14: Still in service.

Test Bar No. 652.— Applied, July, 1912.
Coupler damaged in wreck and removed, 1-30-13.

Test Bar No. 653.— Applied, July, 1912.
Original knuckle pin found missing, 9-9-13.
4-27-14: Still in service.

Test Bar No. 684.— Applied, July, 1912.
Coupler damaged in wreck and removed, 11-15-13.

Test Bar No. 685.— Applied, July, 1912.
4-14-14: Still in service, no repairs required to date.

Test Bar No. 686.— Applied, July, 1912.
Began to take monthly measurements on this coupler, 9-16-13, in place of Test Bar No. 649, which was found missing 9-2-13.
4-1-14: Still in service, no repairs required to date.

Test Bar No. 687.— Applied, July, 1912.
4-17-14: Still in service, no repairs required to date.

Test Bar No. 688.— Applied, July, 1912.
Knuckle pin lost in shop, 1-29-13, renewed.
Clevis renewed, 10-10-13, account being cracked.
4-25-14: Still in service.

Test Bar No. 689.— Applied, July, 1912.
Began to take monthly measurements on this coupler, 5-24-13, in place of Test Bar No. 652, which was damaged and removed 1-30-13.
Original knuckle pin found missing, 9-8-13, renewed.
4-15-14: Still in service.

Measurements at "C," "H" and "E" at last reading on the six Tb tender couplers, being measured monthly, are, as follows, in inches:

Test Bar.	Date.	Set—Plus or Minus—Inches from Original Dimension.						Gage.	
		C	C¹	H	H¹	E⁷	E⁴	Top	Bottom.
No. 648	4-14-14	+.24	+.11	+.17	+.19	—.10	—.05	$4\frac{15}{16}$	$4\frac{23}{32}$
No. 650	4-17-14	+.29	+.17	+.26	+.18	—.08	—.04	$4\frac{15}{16}$	$4\frac{23}{32}$
No. 651	4-23-14	+.30	+.08	+.47	+.26	—.05	—.04	$5\frac{1}{32}$	$4\frac{23}{32}$
No. 653	4-27-14	+.22	+.12	+.11	+.17	—.08	—.03	$4\frac{31}{32}$	$4\frac{31}{32}$
No. 686	4-1-14	+.27	+.16	+.37	+.25	—.06	—.04	$5\frac{1}{32}$	5
No. 689	4-15-14	+.28	+.18	+.20	+.21	—.09	—.04	5	$5\frac{1}{32}$
Average		+.267	+.137	+.263	+.21	—.077	—.04	$4\frac{31}{64}$	$4\frac{31}{32}$—
		+.202		+.237		—.058		4.974	

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(22) Yb TENDER COUPLER (EXPERIMENTAL TYPE).— Six applied, August, 1912. Test Bars Nos. 624, 625, 626, 672, 673 and 674. These couplers had an external knuckle thrower, 1⅛-in. diameter knuckle pin and a wedge type of lock to take up wear and maintain original gage. This was the first design of this type in the early stage of development and were removed after about two months' service and replaced by six similar couplers, embodying changes in lifter, lock and knuckle throw, the latter being placed within the head; also the contour lines were changed from M. C. B. to the "straight lines." The new couplers, Test Bars Nos. 627, 628, 629, 675, 676 and 677, were applied in November, 1912, and removed prior to the convention of 1913. For details, see page 145 of the 1913 Proceedings.

(23) Yd TENDER COUPLER (EXPERIMENTAL TYPE, WEDGE LOCK).— Six applied, August, 1912. Test Bars Nos. 636 to 641, inclusive. Bar No. 636 replaced by Bar No. 636½, December 21, 1912, on account of original coupler being broken in wreck. These couplers have M. C. B. contour lines and 1⅛-in. diameter knuckle pin.

Yd TENDER COUPLER.

Test Bar No. 639.— Applied, August, 1912.

DATE.	DIMENSION LETTER.	A	A¹	B	C	C¹	H	H¹	G	G¹	F	F¹	E³	E⁴	N	N¹
8- 9-12	Original dimensions—inches	10	10	11	4½	4½	6	6	10	10	10	10	9	9	2½	4
9- 9-12	Set—plus or minus—inches	0	0	0	—.04	—.02	0	0	0	0	0	0	0	0	0	0
10- 7-12	Set—plus or minus—inches	0	0	—.02	—.08	—.04	—.05	—.08	+.08	0	—.03	0	0	0	0	0
11-11-12	Set—plus or minus—inches	0	0	+.03	—.17	—.10	—.07	—.07	+.08	0	—.03	0	—.04	—.03	0	0
12- 5-12	Set—plus or minus—inches	0	0	+.02	—.11	—.03	—.04	—.03	+.07	0	—.06	0	—.06	—.03	0	0
1-15-13	Set—plus or minus—inches	0	0	+.02	—.23	—.14	—.12	—.10	+.06	0	—.07	0	—.06	—.03	0	0
2-11-13	Set—plus or minus—inches	0	0	+.02	—.30	—.16	—.17	—.14	+.06	0	—.07	0	—.06	—.03	0	0
3-10-13	Set—plus or minus—inches	0	0	+.02	—.26	—.13	—.13	—.11	+.06	0	—.08	—.02	—.09	—.04	0	0
4-10-13	Set—plus or minus—inches	0	0	+.02	—.22	—.13	—.09	—.10	+.06	0	—.07	—.03	—.09	—.04	0	0
5- 8-13	Set—plus or minus—inches	+.02	0	+.02	—.07	—.06	—.06	—.08	+.07	0	—.07	—.03	—.09	—.04	GAUGE.	
6- 5-13	Set—plus or minus—inches	+.02	0	+.02	—.04	—.05	—.02	—.04	+.08	0	—.07	—.03	—.09	—.04	Top	Bottom
7-16-13	Set—plus or minus—inches	+.02	0	+.02	—.08	—.07	—.01	—.04	+.08	0	—.07	—.02	—.11	—.05	4 7/8	4½
8- 8-13	Set—plus or minus—inches	+.03	0	+.02	—.06	—.06	0	—.02	+.08	0	—.07	—.02	—.11	—.05	4 15/16	4 5/8
9- 4-13	Set—plus or minus—inches	+.03	0	+.02	—.08	—.04	+.03	—.02	+.08	0	—.07	—.02	—.11	—.05	4 15/16	4 5/8
10- 5-13	Set—plus or minus—inches	+.03	0	+.02	—.12	—.09	—.02	—.03	+.09	0	—.07	—.02	—.12	—.05	4½	4½
11- 1-13	Set—plus or minus—inches	+.06	+.02	+.04	—.04	+.01	+.04	+.03	+.11	+.01	—.07	0	—.07	—.02	4 15/16	4 5/8
12-13-13	Set—plus or minus—inches	+.05	+.02	+.03	—.11	—.03	+.02	+.03	+.11	+.01	—.07	0	—.07	—.02	4 31/32	4½
1-12-14	Set—plus or minus—inches	+.05	+.02	+.03	—.12	—.09	+.05	+.03	+.11	+.01	—.07	0	—.07	—.02	4 31/32	4 31/32
2- 6-14	Set—plus or minus—inches	+.07	+.01	+.03	—.16	—.08	+.02	—.07	+.12	+.01	—.08	0	—.07	—.02	4 31/32	4 31/32
4- 1-14	Set—plus or minus—inches	+.07	0	+.03	—.10	—.01	+.03	+.06	+.12	+.01	—.07	—.02	—.11	—.04	4 31/32	4 31/32

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(Measurements prior to 6-5-13 were reported last year.)
The anti-creep on lock lifter found broken off and lifter renewed 9-27-13.
Second new lifter applied 2-6-14, account anti-creep being worn and broken.
4-1-14: Still in service.

Test Bar No. 636½.— Removed 2-1-13, broken lock lifter.

Test Bar No. 637.— Removed 10-18-12, coupler broken in wreck.

Test Bar No. 638.— Removed 1-6-13, broken lock lifter.

Test Bar No. 639.— Still in service, 4-1-14. See log above.

Test Bar No. 640.— Removed 2-14-13, broken lock lifter.

Test Bar No. 641.— Removed 11-1-12, broken lock lifter.

Measurements at "C," "H" and "E" of the Yd tender couplers not broken in wreck at last reading were, as follows, in inches:

Test Bar.	Date.	Set—Plus or Minus —Inches From Original Dimension.						Gage.	
		C	C[1]	H	H[1]	E[3]	E[4]	Top.	Bottom.
No. 636½	2- 1-13	—.08	—.05	+.01	+.02	0	0	4 13/16	4 13/16
No. 638	1- 6-13	+.03	0	+.15	+.06	—.02	—.01		
No. 639	4- 1-14	—.10	—.01	+.03	+.06	—.11	—.04		
No. 640	2-14-13	—.13	—.21	+.04	+.07	—.05	—.01		
No. 641	11- 1-12	—.13	—.04	+.18	0	—.11	—.10		

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(24) Yda TENDER COUPLER (EXPERIMENTAL TYPE).— Six applied, June, 1913. Test Bars Nos. 702 to 707, inclusive. Detail monthly measurements taken only on first three, although all are examined monthly. These couplers have M. C. B. contour lines, straight lock and 1⅛-in. diameter knuckle pin.

Yda TENDER COUPLER.

Test Bar No. 704.— Applied, June, 1913.

DATE.	DIMENSION LETTER.	A	A^1	B	C	C^1	H	H^1	G	G^1	F	F^1	E^2	E^4	GAGE.	
6-13-13	Original dimension—inches	10	11	12	4½	4½	6	6	10	10	10	10	9	9	Top.	Bottom.
7- 2-13	Set—plus or minus—inches	0	+.02	0	+.03	+.04	+.06	+.04	0	0	0	0	0	0	4 11/16	4 11/16
8-12-13	Set—plus or minus—inches	+.02	+.03	0	+.07	+.12	+.10	+.07	+.05	+.01	0	0	0	0	4 11/16	4 11/16
9- 5-13	Set—plus or minus—inches	+.07	+.04	0	+.07	+.13	+.13	+.08	+.08	+.02	—.01	0	0	0	4 11/16	4 11/16
10-16-13	Set—plus or minus—inches	+.07	+.03	0	+.07	+.15	+.15	+.08	+.07	+.01	—.02	—.01	0	0	4 11/16	4 11/16
11-18-13	Set—plus or minus—inches	+.08	+.03	0	+.07	+.16	+.16	+.09	+.08	+.04	—.02	—.02	—.02	0	4 11/16	4 11/16
12-19-13	Set—plus or minus—inches	+.09	+.03	0	+.07	+.17	+.16	+.12	+.09	+.05	—.03	—.02	—.02	0	4 11/16	4 11/16
1-28-14	Set—plus or minus—inches	+.09	+.05	0	+.05	+.15	+.16	+.11	+.11	+.05	—.03	—.02	—.02	0	4 11/16	4 11/16
2-14-14	Set—plus or minus—inches	+.11	+.05	0	+.03	+.13	+.14	+.06	+.12	+.04	—.02	—.02	—.03	—.01	4 11/16	4 11/16
3- 9-14	Set—plus or minus—inches	+.13	+.05	—.02	+.06	+.16	+.21	+.13	+.13	+.07	—.04	—.02	—.06	—.01	4 11/16	4 11/16
4-15-14	Set—plus or minus—inches	+.13	+.05	—.02	+.08	+.17	+.24	+.17	+.12	+.07	—.04	—.03	—.06	—.05	4 11/16	4 11/16

4-15-14: Still in service, no repairs required to date.

Test Bar No. 702.— Applied, June, 1913.

Removed on account of damaged in wreck, 1-8-14.

Test Bar No. 703.— Applied, June, 1913.

This coupler was pulled out on account of broken yoke, 11-7-13, reapplied, 12-5-13.

4-17-14: Still in service, no repairs required to date.

Test Bar No. 705.— Applied, June, 1913.

4-14-14: Still in service, no repairs required to date. Being measured monthly in place of Bar No. 702, which was wrecked 1-8-14 and removed.

Test Bar No. 706.— Applied, June, 1913.

4-22-14: Still in service, no repairs required to date.

Test Bar No. 707.— Applied, June, 1913.

Removed account of damaged in wreck, 10-7-13.

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Measurements at "C," "H" and "E" at last reading on the three Yda tender couplers, being measured monthly, are, as follows, in inches:

Test Bar.	Date.	Set—Plus or Minus —Inches from Original Dimension.						Gage.	
		C	C^1	H	H^1	E^3	E^4	Top.	Bottom.
No. 703	4-17-14	+.11	+.06	+.20	+.24	—.04	—.05	$4\frac{23}{32}$	$4\frac{7}{16}$
No. 704	4-15-14	+.08	+.17	+.24	+.17	—.06	—.05	$4\frac{11}{16}$	$4\frac{11}{16}$
No. 705	4-14-14	+.04	+.09	+.17	+.13	—.05	—.01	$4\frac{11}{32}$	$4\frac{23}{32}$
Average		+.077	+.107	+.203	+.180	—.050	—.037	$4\frac{21}{32}$+	$4\frac{11}{32}$
		+.092		+.191		—.043		$4\frac{11}{32}$—	

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(25) Ydb TENDER COUPLER (EXPERIMENTAL TYPE).— Six applied, June, 1913. Test Bars Nos. 714 to 719, inclusive. Detail monthly measurements taken only on first three, although all are examined monthly. These couplers have M. C. B. contour, 1⅛-in. diameter knuckle pin and are similar to the Yda tender couplers except the lock is wedge-shaped to take up wear and maintain gage.

Ydb TENDER COUPLER.

Test Bar No. 715.— Applied, June, 1913.

DATE.	DIMENSION LETTER.	A	A¹	B	C	C¹	H	H¹	G	G¹	F	F¹	E³	E⁴	M	GAGE.	
6-12-13	Original dimension—inches.....	10	11	12	4½	4½	6	6	10	10	10	10	9	9	7	Top.	Bottom.
7-17-13	Set—plus or minus—inches.....	0	0	0	—.06	+.01	0	—.03	0	0	0	0	0	0	+.26	4⅝	4⅝
8-14-13	Set—plus or minus—inches.....	+.06	0	0	—.07	+.03	+.09	—.05	+.02	+.02	0	0	(	0	+.28	4$\frac{21}{32}$	4⅝
9- 1-13	Set—plus or minus—inches.....	+.06	0	0	—.11	—.03	+.04	—.13	+.02	+.02	0	0	—.03	0	+.30	4$\frac{11}{16}$	4$\frac{21}{32}$
10-13-13	Set—plus or minus—inches.....	+.05	0	0	—.10	—.08	+.01	—.12	+.03	+.02	0	0	—.03	0	+.43	4$\frac{11}{16}$	4$\frac{11}{16}$
12- 3-13	Set—plus or minus—inches.....	+.06	+.02	0	—.10	—.06	+.10	—.06	+.09	+.03	0	0	—.04	—.02	+.52	4⅝	4$\frac{23}{32}$
1-21-14	Set—plus or minus—inches.....	+.07	+.03	0	—.19	—.14	+.03	—.14	+.06	+.05	0	0	—.07	—.04	+.66	4$\frac{11}{16}$	4$\frac{23}{32}$
2-16-14	Set—plus or minus—inches.....	+.07	+.03	0	—.20	—.16	+.01	—.15	+.06	+.05	0	0	—.07	—.04	+.67	4⅝	4$\frac{11}{16}$
3-13-14	Set—plus or minus—inches.....	+.08	+.03	0	—.20	—.14	0	—.13	+.05	+.04	—.02	—.01	—.09	—.06	+.67	4½	4½
4-27-14	Set—plus or minus—inches.....	+.08	+.02	0	—.14	—.11	+.08	—.06	+.07	+.04	—.01	0	—.07	—.04	+.63	4$\frac{11}{32}$	4$\frac{11}{32}$

4-27-14: Still in service, no repairs required to date.

Test Bar No. 714.— Applied, June, 1913.
This coupler was out of service from 11-5-13 to 1-8-14, due to tender repairs.
Lock lifter renewed 4-17-14, account of original lifter breaking.
4-17-14: Still in service.

Test Bar No. 716.— Applied, June, 1913.
New lock lifter applied 12-8-13, account broken.
Tender out of service from 1-27-14 to 3-12-14.
4-17-14: Still in service.

Test Bar No. 717.— Applied, June, 1913.
Coupler removed account damaged in wreck, 12-9-13.

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Test Bar No. 718.— Applied, June, 1913.
Coupler removed 2-18-14 account of broken yoke. Reapplied, 4-3-14.
4-3-14: Still in service, no repairs required to date.

Test Bar No. 719.— Applied, June, 1913.
New lock lifter applied 10-4-13, account broken.
4-7-14: Still in service.

Measurements at "C," "H," "E" and "M" at last reading on the three Ydb tender couplers, being measured monthly, are, as follows, in inches:

Test Bar.	Date.	Set—Plus or Minus —Inches from Original Dimension.							Gage.	
		C	C^1	H	H^1	E^3	E^4	M	Top.	Bottom.
No. 714	4-17-14	—.26	—.14	—.04	—.16	—.06	—.03	+1.16	$4\frac{1}{2}$	$4\frac{11}{16}$
No. 715	4-27-14	—.14	—.11	+.08	—.06	—.07	—.04	+.63	$4\frac{11}{16}$	$4\frac{11}{16}$
No. 716	4-17-14	—.14	—.16	—.02	—.07	—.07	—.02	+.54	$4\frac{9}{16}$	$4\frac{11}{16}$
Average		—.18	—.137	+.007	—.097	—.067	—.03	+.78	$4\frac{11}{16}$	$4\frac{11}{16}$+
		—.158		—.045		—.048			$4\frac{11}{16}$—	

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(26) Xe TENDER COUPLER (EXPERIMENTAL TYPE).— Applied February 21, 1913. Test Bar No. 696.

Xe TENDER COUPLER.

Test Bar No. 696.— Applied February, 1913.

DATE.	DIMENSION LETTER.	A	A^1	B	C	C^1	H	H^1	G	G^1	F	F^1	J	E^2	E^4	GAGE.	
2-21-13	Original dimension—inches.....	10	10	10	4½	4	6	6	10	10	10	10	8½	9½	9½	Top.	Bottom.
3-24-13	Set—plus or minus—inches.....	0	0	+.01	+.01	+.12	+.04	+.09	0	0	0	0	—.02	—.02	—.01	.....	.....
4-12-13	Set—plus or minus—inches.....	0	0	+.02	+.04	+.11	+.04	+.11	0	0	+.01	0	—.02	—.02	—.01	.....	.....
5-20-13	Set—plus or minus—inches.....	0	0	+.02	+.02	+.10	+.05	+.10	0	0	+.01	0	—.01	—.05	—.02	.....	.....
6-10-13	Set—plus or minus—inches.....	0	0	+.02	+.01	+.11	+.04	+.07	0	0	+.01	0	0	—.10	—.04	4¼	4
7-14-13	Set—plus or minus—inches.....	0	0	+.02	+.01	+.10	+.01	+.11	0	0	+.01	0	0	—.09	—.03	4¼	4
8-27-13	Set—plus or minus—inches.....	0	0	+.02	+.05	+.12	+.06	+.11	+.01	+.01	+.01	0	0	—.09	—.04	4⅛	5
9-15-13	Set—plus or minus—inches.....	0	0	+.02	+.06	+.20	+.07	+.11	+.01	+.01	+.01	0	0	—.09	—.04	4⅛	5
10- 2-13	Set—plus or minus—inches.....	0	0	+.02	+.09	+.18	+.06	+.12	+.01	+.01	+.01	+.01	0	—.10	—.03	4⅛	5
10-18-13	Set—plus or minus—inches.....	0	+.02	+.03	—.06	+.05	—.03	—.01	+.05	+.04	+.01	+.01	—.46	—.09	—.01	4	4

The knuckle thrower found missing 7-14-13. A new knuckle thrower applied 10-2-13. This coupler removed 10-18-13 on account of being damaged by the knuckle thrower interfering with the knuckle.

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(27) Ta FREIGHT CAR COUPLER (PRESENT TYPE).— Two applied July 28, 1912. Test Bars Nos. 620 and 621.

Test Bar No. 620.

DATE.	DIMENSION LETTER.	A	A^1	B	C	C^1	H	H^1	G	G^1	F	F^1	J	E^2	E^4	GAGE.	
7-28-12	Original dimension—inches.....	10	10	10	4	4	6	6	10	10	10	10	8	7	7	Top.	Bottom.
8-31-12	Set—plus or minus—inches.....	0	0	+.02	+.13	+.12	+.01	+.07	0	+.01	0	−.01	0	+.05	+.06	.....	.....
9-23-12	Set—plus or minus—inches.....	0	0	+.02	+.15	+.14	+.04	+.09	0	+.03	0	−.01	0	+.07	+.07	.....	.....
10-26-12	Set—plus or minus—inches.....	0	0	+.02	+.14	+.12	+.03	+.08	0	0	0	0	0	+.07	+.07	.....	.....
11-19-12	Set—plus or minus—inches.....	0	0	+.02	+.20	+.13	+.05	+.08	0	0	0	0	0	+.07	+.07	.....	.....
12-20-12	Set—plus or minus—inches.....	0	0	+.02	+.19	+.14	+.05	+.08	0	+.03	0	−.03	0	+.07	+.07	.....	.....
1-30-13	Set—plus or minus—inches.....	0	−.01	+.02	+.17	+.13	+.04	+.07	0	+.02	0	−.03	0	+.06	+.06	.....	.....
2-20-13	Set—plus or minus—inches.....	−.01	−.02	+.02	+.17	+.13	+.04	+.08	0	+.03	0	−.03	0	+.06	+.06	.....	.....
4- 1-13	Set—plus or minus—inches.....	−.02	−.02	+.02	+.18	+.11	+.04	+.07	+.01	+.03	−.01	−.04	0	+.06	+.05	.....	.....
5- 1-13	Set—plus or minus—inches.....	−.02	−.02	+.03	+.18	+.11	+.05	+.07	0	+.03	−.01	−.04	0	+.06	+.06	.....	.....
5-28-13	Set—plus or minus—inches.....	−.02	−.01	+.03	+.20	+.14	+.06	+.07	0	+.04		−.04	0	+.06	+.06	4¾	4¾
7- 1-13	Set—plus or minus—inches.....	−.01	−.01	+.03	+.19	+.15	+.07	+.08	+.01	+.04	−.01	−.04	0	+.06	+.06	4¼	4¼
8- 4-13	Set—plus or minus—inches.....	−.01	−.01	+.03	+.20	+.15	+.07	+.08	+.01	+.04	−.01	−.04	+.01	+.06	+.06	4¼	4¼
9- 2-13	Set—plus or minus—inches.....	0	−.01	+.03	+.22	+.16	+.06	+.10	+.01	+.04	0	−.04	+.01	+.06	+.06	4¼	4¼
9-23-13	Set—plus or minus—inches.....	0	−.01	+.04	+.25	+.17	+.10	+.12	+.02	+.05	0	−.03	+.01	+.07	+.07	4¼	4¼
11- 4-13	Set—plus or minus—inches.....	0	−.01	+.03	+.26	+.20	+.12	+.12	+.02	+.05	0	−.03	0	+.07	+.07	4¼	4¼
11-28-13	Set—plus or minus—inches.....	+.03	−.01	+.08	+.27	+.23	+.13	+.15	+.02	+.05	0	−.03	+.08	+.08	+.08	4⅛	4⅛
1- 9-14	Set—plus or minus—inches.....	+.02	−.01	+.08	+.16	+.13	+.05	+.08	+.02	+.05	0	−.03	+.08	+.05	+.08	4¼	4¼
2- 4-14	Set—plus or minus—inches.....	+.02	−.01	+.08	+.23	+.18	+.06	+.09	+.02	+.05	0	−.03	+.08	+.05	+.08	4¼	4¼
4-16-14	Set—plus or minus—inches.....	+.02	0	+.08	+.34	+.29	+.08	+.17	+.02	+.06	−.01	−.03	+.08	+.05	+.06	4¼	4¼
4-16-14	Last measurement only—Test Bar No. 621.....	+.02	+.03	+.03	+.25	+.16	+.08	+.17	+.04	+.05	−.03	+.03	+.03	+.06	+.07	4¾	4¾

(Measurements prior to 5-1-13 were reported last year.)

Test Bar No. 620.— Applied July 28, 1912.

Knuckle pin found renewed, 1-9-14.

4-16-14: Still in service.

Test Bars Nos. 620 and 621.— Applied July 28, 1912.

Neither coupler lock-sets properly, 8-4-13. New lock lifters, slightly modified, applied 1-9-14, but lock-setting not improved.

New lock lifters, further modified, applied 4-18-14, but lock-setting not materially improved.

4-16-14: Still in service.

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(28) Ua FREIGHT CAR COUPLER (PRESENT TYPE).— Two applied July 28, 1912. Test Bars Nos. 600 and 601.

Test Bar No. 600.

DATE.	DIMENSION LETTER.	A	A^1	B	C	C^1	H	H^1	G	G^1	F	F^1	E^2	E^4	GAGE.	
7-28-12	Original dimension—inches	10	10	10	4½	4	6	6	10	10	10	10	8	8	Top.	Bottom.
9- 2-12	Set—plus or minus—inches	0	0	+.02	+.08	+.16	+.03	+.20	0	0	0	0	+.02	+.03		
9-28-12	Set—plus or minus—inches	0	0	+.04	+.07	+.21	+.07	+.20	0	0	0	0	+.02	+.03		
11- 2-12	Set—plus or minus—inches	0	+.01	+.04	+.11	+.22	+.08	+.20	0	+.01	0	0	+.03	+.04		
11-19-12	Set—plus or minus—inches	0	+.01	+.04	+.14	+.22	+.09	+.20	0	+.01	0	0	+.06	+.05		
1-13-13	Set—plus or minus—inches	—.01	0	+.04	+.14	+.21	+.08	+.20	0	+.02	—.01	—.01	+.06	+.05		
2-28-13	Set—plus or minus—inches	—.01	0	+.03	+.16	+.22	+.08	+.20	0	+.02	—.01	—.02	+.06	+.05		
4- 1-13	Set—plus or minus—inches	—.01	—.02	+.03	+.15	+.20	+.11	+.18	0	+.04	—.01	—.07	+.08	+.05		
5- 1-13	Set—plus or minus—inches	—.01	—.03	+.03	+.14	+.22	+.14	+.18	0	+.04	—.01	—.07	+.06	+.05		
5-28-13	Set—plus or minus—inches	0	—.03	+.03	+.15	+.20	+.13	+.18	0	+.05	—.01	—.07	+.07	+.05	4 1/16	4 1/16
6-25-13	Set—plus or minus—inches	0	—.03	+.03	+.17	+.23	+.15	+.21	0	+.06	—.01	—.07	+.07	+.06	4 1/16	4 1/16
8- 4-13	Set—plus or minus—inches	0	—.03	+.03	+.19	+.25	+.15	+.22	+.01	+.06	—.01	—.07	+.07	+.06	4 1/16	4 1/16
9-23-13	Set—plus or minus—inches	0	—.03	+.03	+.26	+.31	+.16	+.26	+.02	+.06	0	—.07	+.15	+.14	5	4 15/16
11- 4-13	Set—plus or minus—inches	0	—.02	+.03	+.27	+.28	+.16	+.25	+.02	+.06	—.01	—.07	+.13	+.11	4 15/16	4 15/16
11-28-13	Set—plus or minus—inches	0	—.02	+.03	+.26	+.26	+.16	+.27	+.01	+.05	—.02	—.07	+.11	+.07	5	4 15/16
1- 9-14	Set—plus or minus—inches	0	—.02	+.03	+.26	+.30	+.16	+.28	+.02	+.06	—.02	—.07	+.12	+.08	4 15/16	4 15/16
2- 4-14	Set—plus or minus—inches	+.01	—.02	+.03	+.30	+.26	+.16	+.27	+.01	+.07	—.01	—.07	+.13	+.06	5	4 15/16
3-31-14	Set—plus or minus—inches	+.02	—.02	+.03	+.26	+.31	+.17	+.27	+.03	+.07	—.01	—.08	+.13	+.08	4 15/16	4 15/16
3-31-14	Last measurement only. Test Bar No. 601	+.07	+.04	+.05	*	*	*	*	+.06	+.13	—.01	—.09	*	*	5 1/16	5

(Measurements prior to 5-1-13 were reported last year.)

Test Bar No. 600.— Applied July 28, 1912.
3-31-14: Still in service, no repairs required to date.

Test Bar No. 601.— Applied July 28, 1912.
Knuckle pin found renewed, 11-4-13.
* Knuckle renewed 2-16-14, account broken. New knuckle laid off, 3-31-14.
3-31-14: Still in service.

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(29) Wa FREIGHT CAR COUPLER (PRESENT TYPE).— Two applied July 28, 1912. Test Bars Nos. 604 and 605.

Test Bar No. 604.

DATE.	DIMENSION LETTER.	A	A^1	B	C	C^1	H	H^1	G	G^1	F	F^1	J	E^2	E^4	GAGE.	
7-28-12	Original dimension—inches.....	10	10	10	4	4	6	6	10	10	10	10	8	8½	8½	Top.	Bottom.
8-31-12	Set—plus or minus—inches.....	0	0	0	+.09	+.12	+.11	+.13	0	0	0	0	0	0	+.02	.....	.....
9-23-12	Set—plus or minus—inches.....	0	0	0	+.09	+.13	+.11	+.14	0	0	0	0	+.02	0	+.03	.....	.....
10-26-12	Set—plus or minus—inches.....	0	0	0	+.11	+.13	+.12	+.15	0	0	0	0	+.01	+.02	+.05	.....	.....
11-19-12	Set—plus or minus—inches.....	—.02	0	—.02	+.14	+.14	+.13	+.19	0	0	0	0	0	+.02	+.05	.....	.....
12-30-12	Set—plus or minus—inches.....	—.02	0	—.02	+.16	+.18	+.17	+.23	0	0	0	0	0	+.03	+.08	.....	.....
1-30-13	Set—plus or minus—inches.....	—.03	—.01	—.04	+.09	+.17	+.17	+.20	+.01	+.01	—.01	—.01	—.02	+.01	+.04	.....	.....
2-20-13	Set—plus or minus—inches.....	—.03	—.01	—.04	+.16	+.23	+.17	+.23	+.01	+.02	—.01	—.01	—.02	+.01	+.08	.....	.....
5- 6-13	Set—plus or minus—inches.....	—.02	+.01	—.04	+.16	+.24	+.20	+.24	+.02	+.02	—.01	—.01	—.02	—.01	+.07	.....	.....
5-28-13	Set—plus or minus—inches.....	—.01	+.01	—.03	+.16	+.24	+.19	+.23	+.03	+.02	—.01	0	—.02	—.01	+.08	4[illegible]	4[illegible]
6-25-13	Set—plus or minus—inches.....	—.01	+.01	—.03	+.16	+.26	+.21	+.24	+.03	+.03	0	0	—.02	—.01	+.08	4[illegible]	4[illegible]
7-30-13	Set—plus or minus—inches.....	0	+.01	—.03	+.18	+.26	+.20	+.25	+.03	+.04	0	0	—.02	—.01	+.08	4[illegible]	4[illegible]
9-24-13	Set—plus or minus—inches.....	+.01	+.01	—.03	+.16	+.30	+.23	+.27	+.03	+.04	0	0	—.01	—.08	+.10	4[illegible]	5
11- 1-13	Set—plus or minus—inches.....	+.01	+.01	—.03	+.12	+.24	+.20	+.23	+.03	+.04	0	0	—.03	—.01	+.25	4[illegible]	4[illegible]
11-28-13	Set—plus or minus—inches.....	0	+.01	—.03	+.23	+.36	+.22	+.32	+.03	+.03	0	—.01	—.12	0	+.25	5	5[illegible]
2- 4-14	Set—plus or minus—inches.....	0	+.01	—.02	+.23	+.41	+.22	+.30	+.03	+.04	0	—.01	—.12	—.03	+.25	4[illegible]	5[illegible]
4- 6-14	Set—plus or minus—inches.....	0	+.01	—.03	+.24	+.44	+.24	+.33	+.03	+.03	+.01	0	—.12	—.04	+.26	5[illegible]	5[illegible]
4- 6-14	Last measurement only. Test Bar No. 605.....	—.02	+.01	—.03	+.18	+.31	+.17	+.34	+.02	+.02	+.01	—.01	—.06	—.07	+.16	4[illegible]	4[illegible]

(Measurements prior to 5-28-13 were reported last year.)

Test Bar No. 604.— Applied July 28, 1912.
Knuckle pin renewed 10-31-13, account gage to limit.
4-6-14: Still in service.

Test Bar No. 605.— Applied July 28, 1912.
4-6-14: Still in service, no repairs required to date.

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(30) Xa FREIGHT CAR COUPLER (PRESENT TYPE).— Two applied July 28, 1912. Test Bars Nos. 608 and 609.

Test Bar No. 608.

DATE.	DIMENSION LETTER.	A	A^1	B	C	C^1	H	H^1	G	G^1	F	F^1	J	E^2	E^4	GAGE.	
7-28-12	Original dimension—inches.....	10	10	10	4	4	6	6	10	10	10	10	8	8½	8½	Top.	Bottom.
9- 4-12	Set—plus or minus—inches.....	0	0	0	+.09	+.06	+.05	+.09	0	0	0	0	0	0	0	.....	.....
9-28-12	Set—plus or minus—inches.....	0	0	0	+.11	+.08	+.05	+.11	0	0	0	0	0	0	0	.....	.....
10-26-12	Set—plus or minus—inches.....	0	0	0	+.16	+.09	+.08	+.10	0	+.01	0	0	0	0	0	.....	.....
11-19-12	Set—plus or minus—inches.....	0	0	0	+.18	+.12	+.12	+.15	0	+.01	0	0	—.02	0	0	.....	.....
12-20-12	Set—plus or minus—inches.....	0	0	0	+.19	+.12	+.11	+.15	0	0	0	0	—.02	0	0	.....	.....
1-30-13	Set—plus or minus—inches.....	0	0	0	+.18	+.09	+.09	+.14	0	0	0	0	—.02	0	0	.....	.....
2-28-13	Set—plus or minus—inches.....	0	0	0	+.20	+.11	+.10	+.16	0	0	0	0	—.02	0	0	.....	.....
4-21-13	Set—plus or minus—inches.....	0	0	0	+.27	+.16	+.14	+.16	0	+.02	—.01	—.01	—.07	+.05	+.07	.....	.....
5-28-13	Set—plus or minus—inches.....	—.01	0	0	+.28	+.18	+.16	+.18	+.01	+.03	—.02	—.01	—.07	+.06	+.07	5 1/32	5
9- 2-13	Set—plus or minus—inches.....	—.01	+.02	0	+.21	+.12	+.12	+.13	+.02	+.04	—.02	—.01	—.04	—.04	—.06	4 31/32	4 31/32
9-24-13	Set—plus or minus—inches.....	0	+.03	0	+.26	+.21	+.17	+.24	+.02	+.04	—.02	—.01	—.03	—.04	—.06	5 1/32	5 1/32
11- 4-13	Set—plus or minus—inches.....	0	+.03	0	+.29	+.21	+.17	+.26	+.02	+.04	—.02	—.01	—.03	—.04	—.06	5 1/32	5 1/32
11-28-13	Set—plus or minus—inches.....	—.02	+.03	+.01	+.23	+.17	+.16	+.25	+.02	+.05	—.02	—.01	—.03	—.03	—.07	5 1/32	5 1/32
1- 9-14	Set—plus or minus—inches.....	0	+.03	0	+.30	+.22	+.18	+.26	+.03	+.06	—.02	—.01	—.03	—.06	—.06	5 1/32	5 1/32
2- 4-14	Set—plus or minus—inches.....	0	+.03	0	+.32	+.22	+.19	+.26	+.03	+.06	—.02	—.01	—.03	—.06	—.06	5 1/32	5 1/32
4-16-14	Set—plus or minus—inches.....	0	+.03	0	+.33	+.22	+.15	+.26	+.02	+.06	—.02	0	Lost	—.05	—.06	5 1/32	5 1/32
4-16-14	Last measurement only. Test Bar No. 609.....	+.03	+.02	+.01	+.17	+.18	+.13	+.17	+.03	+.02	0	—.01	+.01	+.03	+.04	4 31/32	5 1/32

(Measurements prior to 5-28-13 were reported last year.)

Test Bar No. 608.— Applied July 28, 1912.
Knuckle thrower retaining pin renewed 9-25-13, account lost.
4-16-14: Still in service.

Test Bar No. 609.— Applied July 28, 1912.
Original knuckle found missing and new one laid off 4-21-13, gage 5 in.
Second new knuckle applied account of gage to limit and new lock applied account broken, 9-3-13.
4-16-14: Still in service.

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(31) Ya FREIGHT CAR COUPLER (PRESENT TYPE).— Two applied July 28, 1912. Test Bars Nos. 612 and 613.
Test Bar No. 612.

DATE.	DIMENSION LETTER.	A	A¹	B	C	C¹	H	H¹	G	G¹	F	F¹	E²	E⁴	GAGE. Top.	GAGE. Bottom.
7-28-12	Original dimension—inches	10	10	10	4¼	4	6	6	10	10	10	10	8	8		
8-31-12	Set—plus or minus—inches	0	0	0	+.18	+.20	+.14	+.13	0	0	0	0	+.08	+.09		
9-23-12	Set—plus or minus—inches	0	0	0	+.18	+.20	+.12	+.10	0	0	0	0	+.08	+.10		
10-26-12	Set—plus or minus—inches	0	0	0	+.18	+.20	+.13	+.14	0	0	0	0	+.10	+.08		
11-19-12	Set—plus or minus—inches	0	0	0	+.18	+.22	+.18	+.18	0	0	0	0	+.10	+.08		
12-27-12	Set—plus or minus—inches	0	+.01	0	+.19	+.20	+.17	+.17	0	0	0	0	+.08	+.07		
1-30-13	Set—plus or minus—inches	0	+.01	0	+.21	+.22	+.15	+.17	+.02	+.01	—.02	0	+.10	+.09		
2-20-13	Set—plus or minus—inches	0	+.01	0	+.22	+.21	+.15	+.18	+.02	+.01	—.02	0	+.10	+.09		
5- 6-13	Set—plus or minus—inches	+.01	+.02	+.01	+.22	+.19	+.14	+.16	+.03	+.01	—.03	0	+.07	+.08		
5-28-13	Set—plus or minus—inches	+.01	+.02	+.02	+.21	+.20	+.14	+.19	+.03	+.01	—.03	—.01	+.07	+.08	4 11/16	4 11/16
7- 1-13	Set—plus or minus—inches	0	+.01	+.02	+.23	+.22	+.15	+.21	+.02	+.02	—.03	—.01	+.08	+.09	4 11/16	4 11/16
7-30-13	Set—plus or minus—inches	0	+.02	+.02	+.25	+.24	+.18	+.21	+.03	+.02	—.03	—.01	+.10	+.09	4 11/16	4 11/16
9- 6-13	Set—plus or minus—inches	0	+.02	+.02	+.26	+.26	+.18	+.22	+.03	+.02	—.03	—.01	+.10	+.09	4 11/16	4 11/16
9-24-13	Set—plus or minus—inches	0	+.02	+.02	+.23	+.27	+.15	+.23	+.04	+.02	—.03	—.01	+.11	+.10	4 1/16	5
11- 7-13	Set—plus or minus—inches	0	+.02	+.02	+.24	+.28	+.19	+.24	+.03	+.02	—.04	—.01	+.11	+.10	4 11/16	5
11-28-13	Set—plus or minus—inches	+.01	+.02	+.02	+.27	+.35	+.20	+.22	+.03	+.03	—.03	—.01	+.11	+.09	4 11/16	5
1- 9-14	Set—plus or minus—inches	+.01	+.02	+.02	+.27	+.35	+.20	+.22	+.04	+.03	—.03	—.01	+.11	+.09	4 11/16	5
2-27-14	Set—plus or minus—inches	+.02	+.03	+.03	+.35	+.53	+.27	+.36	+.05	+.03	—.03	—.01	+.14	+.12	5 1/16	5 1/16
4- 6-14	Set—plus or minus—inches	+.01	+.03	+.04	+.28	+.30	+.17	+.23	+.04	+.03	—.02	—.01	+.13	+.12	4 11/16	5
Last Measurement only—Test Bar No. 613.																
4- 6-14		—.01	+.01	+.01	+.21	+.24	+.17	+.32	+.01	+.03	—.03	—.01	+.06	+.07	4 11/16	4 11/16

(Measurements prior to 5-28-13 were reported last year.)

Test Bar No. 612.— Applied July 28, 1912.

Knuckle pin found broken and renewed 2-27-14. Measurements recorded that date were taken before renewal of pin. Gage, after renewal of pin, was 4 11/16 in. top and 4 15/16 in. at bottom.

4-6-14: Still in service

Test Bar No 613.— Applied July 28, 1912.

Coupler pulled out 11-22-13, due to broken yoke. Coupler recovered and reapplied 2-27-14 with new knuckle pin, account original pin lost.

4-6-14: Still in service, no repairs required to date.

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(32) Yc Freight Car Coupler (Present Type).— Two applied July 28, 1912. Test Bars Nos. 616 and 617.

Test Bar No. 616.

Date.	Dimension Letter.	A	A¹	B	C	C¹	H	H¹	G	G¹	F	F¹	J	E²	E⁴	Gage.	
7-28-12	Original dimension—inches.....	10	10	10	4	4	6	6	10	10	10	10	8	8½	8¼	Top.	Bottom.
8-31-12	Set—plus or minus—inches.....	0	0	0	+.06	+.04	+.06	+.11	0	0	0	0	0	0	0	.....	.....
9-23-12	Set—plus or minus—inches.....	0	0	0	+.07	+.07	+.07	+.12	0	0	0	0	0	0	0	.....	.....
10-25-12	Set—plus or minus—inches.....	0	0	0	+.07	+.11	+.07	+.12	+.02	+.02	—.02	0	0	0	0	.....	.....
11-19-12	Set—plus or minus—inches.....	—.01	—.01	0	+.07	+.12	+.07	+.12	+.03	+.02	—.02	0	0	0	0	.....	.....
12-27-12	Set—plus or minus—inches.....	—.01	—.01	0	+.07	+.11	+.06	+.13	+.03	+.02	—.02	0	0	—.04	0	.....	.....
1-30-13	Set—plus or minus—inches.....	—.01	—.02	0	+.07	+.08	+.06	+.13	+.04	+.02	—.03	—.02	+.02	—.04	—.01	.....	.....
2-20-13	Set—plus or minus—inches.....	—.01	—.02	0	+.07	+.08	+.04	+.12	+.03	+.03	—.03	—.02	+.02	—.04	—.01	.....	.....
4- 8-13	Set—plus or minus—inches.....	—.01	—.01	0	+.08	+.11	+.04	+.11	+.03	+.03	—.03	—.02	+.01	—.02	—.01	.....	.....
5- 1-13	Set—plus or minus—inches.....	—.01	—.01	0	+.08	+.13	+.07	+.13	+.03	+.03	—.03	—.02	0	—.02	+.01	.....	.....
6- 2-13	Set—plus or minus—inches.....	—.01	—.01	0	+.09	+.14	+.07	+.13	+.03	+.03	—.03	—.02	0	—.02	+.03	4 11/32	4 11/32
6-25-13	Set—plus or minus—inches.....	—.01	—.02	+.01	+.10	+.16	+.07	+.11	+.05	+.05	—.03	—.02	+.02	—.03	+.03	4 11/32	4 11/32
7-30-13	Set—plus or minus—inches.....	—.01	—.02	+.01	+.10	+.15	+.07	+.12	+.05	+.05	—.03	—.02	+.02	—.03	+.03	4¼	4 11/32
9- 6-13	Set—plus or minus—inches.....	—.02	—.02	+.01	+.13	+.16	+.07	+.13	+.06	+.04	—.03	—.02	+.02	—.03	+.03	4 11/32	4¼
10- 1-13	Set—plus or minus—inches.....	—.02	—.02	+.01	+.13	+.20	+.07	+.11	+.06	+.04	—.03	—.02	+.02	—.03	+.05	4 11/32	4 11/32
11- 7-13	Set—plus or minus—inches.....	—.03	—.02	+.01	+.13	+.21	+.07	+.13	+.05	+.05	—.03	—.02	+.02	—.02	+.06	4 11/32	4¼
11-23-13	Set—plus or minus—inches.....	—.02	—.02	+.01	+.16	+.23	+.07	+.10	+.05	+.06	—.03	—.03	+.01	—.01	+.05	4 11/32	4¼
1- 9-14	Set—plus or minus—inches.....	—.02	—.02	+.01	+.16	+.19	+.05	+.13	+.07	+.05	—.04	—.03	+.01	—.01	+.05	4 11/32	4 11/32
2-27-14	Set—plus or minus—inches.....	—.02	—.02	+.02	+.16	+.22	+.06	+.16	+.05	+.06	—.03	—.02	+.03	+.01	+.06	4 11/32	4 11/32
4-16-14	Set—plus or minus—inches.....	—.02	—.02	+.02	+.14	+.17	+.04	+.13	+.05	+.05	—.03	—.02	+.04	+.01	+.06	4¼	4¼
Last Measurement only—Test Bar No. 617.																	
4-16-14	.....	—.07	—.02	+.02	+.26	+.26	+.07	+.23	+.09	+.10	—.11	—.07	0	—.03	+.08	4 11/32	4 7/32

(Measurements prior to 5-1-13 were reported last year.)

Test Bars Nos. 616 and 617.— Applied July 28, 1912.

4-16-14: Both couplers still in service, no repairs required to date.

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(33) SUMMARY — FREIGHT CAR COUPLERS.— Summary of measurements, showing permanent set at "C," "H" and "E" of the twelve couplers of present type in freight car service at last reading. All these couplers were in service at the last reading.

COUPLERS.	TEST BAR No.	DATE.	TIME IN SERVICE.	SET—PLUS OR MINUS—INCHES FROM ORIGINAL DIMENSION.						GAGE.	
				C	C¹	H	H¹	E³	E⁴	Top.	Bottom.
Ta	620	4-16-14	20 months, 20 days	+.34	+.29	+.08	+.17	+.05	+.06	4 23/32	4 1/8
Ta	621	4-16-14	20 months, 20 days	+.25	+.16	+.08	+.17	+.06	+.07	4 11/16	4 3/32
Ua	600	3-31-14	20 months, 4 days	+.26	+.31	+.17	+.27	+.13	+.08	4 11/32	4 1/32
Ua	601	2- 4-14	18 months, 8 days	+.18	+.21	+.13	+.28	+.03	+.05	5	5 1/32
Wa	604	4- 6-14	20 months, 10 days	+.24	+.44	+.24	+.33	—.04	+.26	5 1/32	5 3/32
Wa	605	4- 6-14	20 months, 10 days	+.18	+.31	+.17	+.24	—.07	+.16	4 1/16	4 1/16
Xa	608	4-16-14	20 months, 20 days	+.33	+.22	+.15	+.26	—.05	—.06	5 1/32	5 1/32
Xa	609	4-16-14	20 months, 20 days	+.17	+.18	+.13	+.17	+.03	+.04	4 29/32	5 1/32
Ya	612	4- 6-14	20 months, 10 days	+.28	+.30	+.17	+.23	+.13	+.12	4 31/32	5
Ya	613	4- 6-14	17 months, 5 days	+.21	+.24	+.17	+.32	+.06	+.07	4 1/32	4 1/8
Yc	616	4-16-14	20 months, 20 days	+.14	+.17	+.04	+.13	+.01	+.06	4 3/32	4 3/32
Yc	617	4-16-14	20 months, 20 days	+.26	+.26	+.07	+.23	—.03	+.08	4 1/32	4 1/16
				+.237	+.257	+.133	+.233			4 1/16	4 1/16+
Average, all bars			20 months, 1 day	+.247		+.183				4 1/16	

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CONFERENCES WITH COUPLER MANUFACTURERS.

(34) SELECTION OF COUPLERS FOR GENERAL TRIAL IN SERVICE.

In reporting upon and exhibiting to the Association last year the various designs of couplers, which were submitted to your committee by the respective coupler manufacturers as embodying the specifications on design jointly agreed upon by both, your committee stated that the coupler manufacturers had designed the working parts of the couplers thus submitted according to their ideas to meet these specifications, and that it was essential to select from these couplers several designs to be tried out in service during the ensuing year to definitely determine the best contour line, efficiency of operation and strength of the various parts, with a view of harmonizing the designs thus chosen and eliminating any details that may prove unsatisfactory to the end of establishing the standard coupler.

(35) Accordingly in continuation of this policy, approved by the Association, the chairman called a meeting of your committee for July 14, 1913, at Altoona, Pa., for the purpose of thus selecting the couplers which should enter this elimination trial in service; and also a joint meeting of the coupler manufacturers and coupler committee for the following day, July 15, 1913, at Altoona, Pa., for the purpose of announcing the couplers thus selected for the trial and to arrange for the manufacture and trial of same, etc.

(36) MINUTES OF COUPLER COMMITTEE MEETING, HELD AT ALTOONA, PA., JULY 14, 1913.

The following members of the committee were present:

Name.	*Railroad Company.*
Mr. R. L. Kleine, Chairman	Pennsylvania Railroad Company.
Mr. F. W. Brazier	N. Y. C. & H. R. Railroad Co.
Mr. G. W. Wildin	N. Y. N. H. & H. Railroad Co.
Mr. F. H. Stark	Montour Railroad Company.
Mr. B. Julien	Union Pacific Railroad Co.

The following were also present:

Mr. I. J. Justus	N. Y. C. & H. R. Railroad Co.
Mr. C. H. Bilty	C. M. & St. P. Railway.
Mr. T. J. Boring	Pennsylvania Railroad Company.
Mr. F. H. Blake	Pennsylvania Railroad Company.

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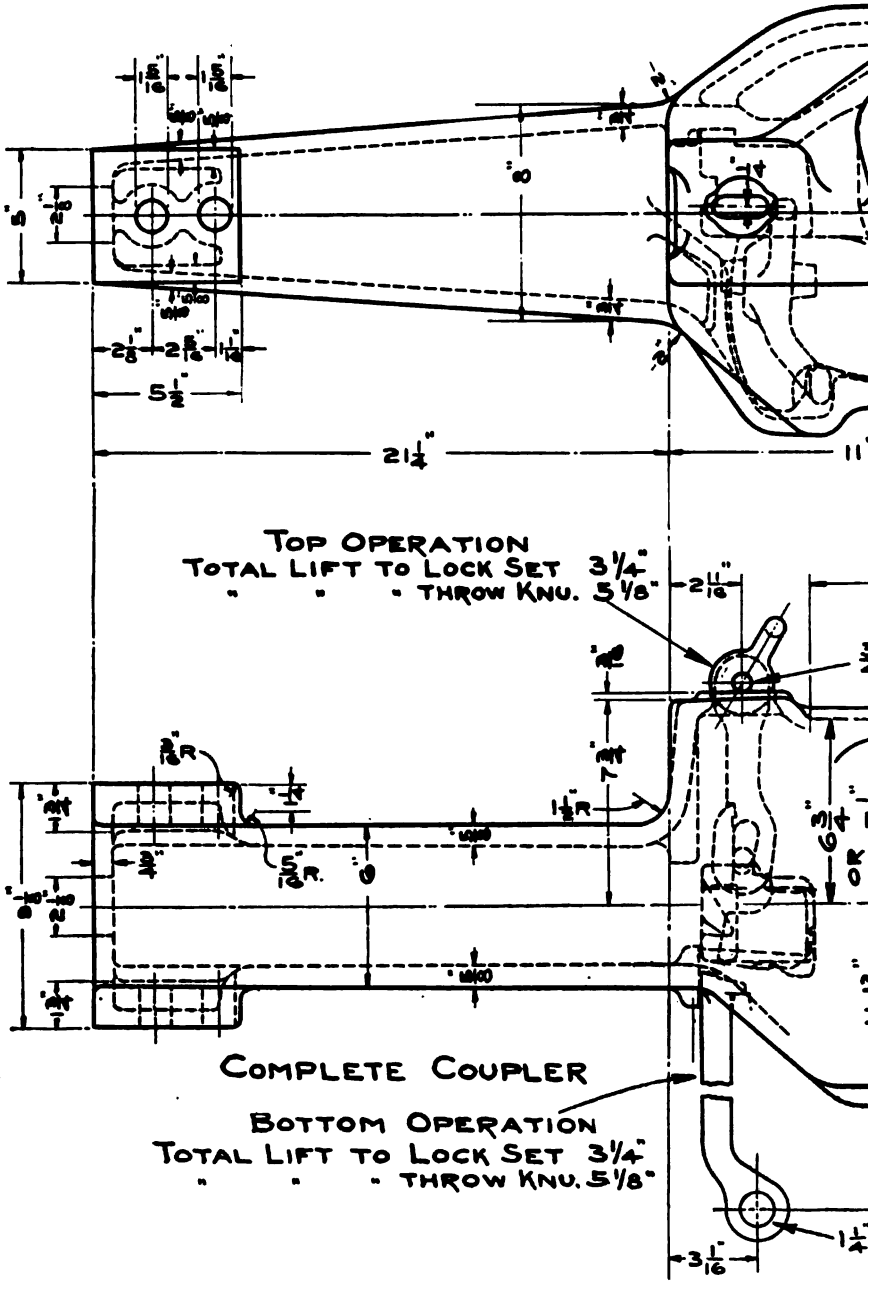
TOP OPERATION
TOTAL LIFT TO LOCK SET 3¼"
" " " THROW KNU. 5⅛"
COMPLETE COUPLER
BOTTOM OPERATION
TOTAL LIFT TO LOCK SET 3¼"
" " " THROW KNU. 5⅛"

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The work of the committee and the status of the standard coupler was gone over and discussed in general. The nine couplers, which were submitted to your committee as embodying the joint specifications of design and which your committee exhibited at the 1913 convention, were brought to Altoona and mounted on operating racks for the purpose of studying each and to learn the effects of being in the weather. The question of choosing the couplers that should enter the elimination trial in service was one of much moment and study, since all the couplers submitted were built around the same joint specifications and hence were brought to a common basis of design. Considering this phase of the question and the strength of the couplers as previously shown in the results of the pulling tests, there is no doubt but that most of the couplers could, with propriety, have been selected for the elimination trial in service and by sufficient experimenting and changing could have been developed to a degree of perfection as to be worthy of adoption as standard; but as such a course necessarily would have required and involved a considerable length of time, it is readily seen that in such a group of couplers those which presented the highest development at the time should receive the greatest consideration, especially since some members of the Association believed that the work was not progressing as rapidly as possible. The result would probably have been the same in the end, but the desire was not to defer the adoption of a standard coupler by this Association any longer than absolutely necessary.

Each coupler submitted was taken up and each minute detail, both of design and operation, was considered and thoroughly discussed, and by carefully weighing all the points at issue it was decided to try out two couplers, and the following were selected to enter the elimination trial in service:

American Steel Foundries No. 3 modified Alliance coupler.

The National Malleable Castings Co. Bazeley coupler.

(See Exhibits Nos. 25 and 26, respectively, for views of the complete couplers and parts.)

These couplers have straight locks and were selected for the general trial, but the committee did not feel like giving up the advantages dormant in the wedge-lock principle, which is applicable to most coupler designs, nor did the committee desire that a wedge-lock coupler be tried out in service in general, hence it was decided to make and confine further experiments with this wedge principle under the direct supervision of your committee. The coupler selected for these trials was:

The National Malleable Castings Co. Bazeley coupler with wedge lock.

Having thus carefully selected the couplers for trial in service, a night session was held in order to complete the future method of procedure.

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(37) MINUTES OF JOINT MEETING HELD AT ALTOONA, PA., JULY 15, 1913.

The following were present:

REPRESENTATIVES OF COUPLER MANUFACTURERS.

A. A. Pope	The National Malleable Castings Co.
S. L. Smith	
H. F. Pope	
R. P. Lamont	American Steel Foundries.
G. E. Scott	
R. E. Janney	
S. P. Bush	Buckeye Steel Castings Company.
G. T. Johnson	
F. P. Huntley	Gould Coupler Company.
W. F. Richards	
Wm. McConway, Jr	The McConway & Torley Company.
M. B. Giberson	Monarch Steel Castings Company.

REPRESENTATIVES OF M. C. B. COUPLER COMMITTEE.

R. L. Kleine (Chairman)	Pennsylvania Railroad Company.
G. W. Wildin	N. Y. N. H. & H. Railroad Co.
F. H. Stark	Montour Railroad Company.
B. Julien	Union Pacific Railroad Co.
C. H. Bilty	C. M. & St. P. Railway.
I. J. Justus	N. Y. C. & H. R. Railroad Co.
T. J. Boring	Pennsylvania Railroad Company.
F. H. Blake	Pennsylvania Railroad Company.

The chairman opened the meeting by distributing test sheets and various summaries of the pulling tests of the same types of couplers which the coupler manufacturers submitted to the M. C. B. Committee on Coupler and Draft Equipment for exhibition purposes at the 1913 convention. The results of the tests were then discussed by all, most of the test sheets having been forwarded to the members previous to this meeting.

Mr. R. L. Kleine stated that the M. C. B. Coupler Committee having very carefully considered every feature and detail of the couplers submitted by the coupler manufacturers, has selected the couplers for the general trial in service, in limited quantities, preferably on locomotives. The M. C. B. Coupler Committee feels that all the coupler manufacturers should make these trial couplers; this would work out the problem of interchangeability of same coupler and parts being made by different manufacturers, and all the manufacturers would be prepared to make the standard coupler when same is selected.

The chairman asked the coupler manufacturers to express their views on the whole situation, how they stood should their coupler be or not be among the ones selected for the trial, and state what features in their specification couplers are covered by patents.

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(All members participated more or less freely in the discussion during the meeting, and only the gist of the remarks are recorded in brief form.)

MR. R. P. LAMONT: Our company will stand by the agreement made upon entering this work. We and some others feel as if each should make his own coupler during the experimental stage, not doubting other manufacturers' ability. Not prepared to talk about patent features; possibly Mr. Janney is.

MR. R. E. JANNEY: Can furnish list of all patents we hold.

MR. R. L. KLEINE: Each manufacturer should be permitted to make any test coupler. The circular to M. C. B. Association will ask the members to order couplers and make tests preferably on locomotives and probably on an order for new cars. Make general trial over country and also see how interchangeability of couplers made by different manufacturers works out. Mr. J. T. Wallis, General Superintendent Motive Power, Penna. Railroad Company, has stated recently that he would make a trial on an order for new cars. Many visitors at the booth of the coupler committee during the 1913 convention picked on certain couplers and expressed a desire to put some in service.

MR. R. P. LAMONT: I think the question of only the manufacturer who owns the coupler making them during the trial period is important. Each owner wishes his coupler to make the best showing possible, and as any coupler selected for the trial will require more or less changes, it would be impractical for more than one company to develop the same coupler.

MR. R. L. KLEINE: It is desired that all speak freely on all questions and that everything be brought up at this time.

MR. G. W. WILDIN: The manufacturers whose coupler is not selected must learn some day to make the standard coupler, so why not begin during this trial period.

MR. S. P. BUSH: We entered the agreement in good faith and will abide by whatever the committee does. Don't know what influence last tests had on coupler committee. Some manufacturers have advanced further than others and should have benefit of same. We have taken regular commercial material and have not had opportunity nor facilities for development, and have been handicapped by local conditions at Columbus.

MR. R. L. KLEINE: We have been considering strength and operation equally important.

MR. S. P. BUSH: We all know that in the past quite a few couplers which have looked good at the start were found impractical in a short time, due mainly to poor operation. Make limited trial of all these experimental couplers in service.

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As Mr. Wildin said, it must come to all manufacturers making the same coupler, but during the trial period think best results would be obtained by putting limited number of all these experimental couplers in service and let owners only make them.

MR. M. B. GIBERSON: Feel as Messrs. Lamont and Bush do about making the trial couplers and believe all the experimental couplers should have a service trial. Entered this work in good faith. About patent features, understand our company stands ready, as in agreement, to allow other manufacturers to make the coupler should ours be selected.

MR. S. P. BUSH: The features in our coupler covered by patents are:

Lock set, patent pending two years, ran into an interference, which was decided in our favor; expect a decision soon.

Lock lift, whereby we have a floating lock, lifting apparatus recedes.

Convex bearing of lock against side wall — patent pending.

MR. M. B. GIBERSON: Prefer to send papers and not state features patented at this time. The features covered by patents are as follows:

Protection for working parts for bottom uncoupling lever.

Bell crank kicker.

Seating of lock on guard-arm side — an old one of mine — now assigned to Monarch Steel Castings Co., two years yet to run. Bevel surface of lock set in connection therewith.

Bottom lifting lever.

Five claims — distinct patents applied for.

Have had action on some cases and was required to separate the claims.

At this juncture the members journeyed to drop-test machine, Juniata shops, where an inspection was made of the couplers which had been exhibited at 1913 convention by the M. C. B. Coupler Committee, and specimens of the same types of couplers that had been subjected to the pulling test at Altoona.

Upon return from Juniata, the meeting again went into session.

MR. F. P. HUNTLEY: All the experimental couplers submitted should be tried out in service trial and each manufacturer should make his own. We have met every original condition made by the committee.

MR. R. L. KLEINE: Would your company agree to allow all the manufacturers to make the coupler should your design be adopted as standard?

MR. F. P. HUNTLEY: Not prepared to answer that to-day; the question should go before our board of directors. Can answer the question within a reasonable length of time. If our coupler be selected, arrangements can be no doubt made whereby all the coupler manufacturers could make it. Mr. Richards can answer all questions relative to the patents.

MR. W. F. RICHARDS: Patented features involved in our "GC" coupler are:

Lock-block guide having lock suspended to guide, lock swinging independent of guide and seating full width of ledge.

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Side operation — connection to lock.

Anti-creep device for top lift with wedge lock.

Shoulders taking side thrust off pin — not in our "GC" coupler, but are on our "ZZ" coupler previously submitted.

AFTERNOON SESSION.

MR. A. A. POPE: I recognize that all will eventually make couplers selected, but to make time they should be made by owners. Wooden core boxes and patterns would not last long, and gages should also be made. It will take six months to finish master patterns, iron core boxes, etc. We expect to develop the coupler and it will require more or less changes, and more than one company can not develop the same coupler. The coupler committee should say how the tests should be made, where they should be made and in what volume they should be made, keeping in close touch with it.

MR. R. L. KLEINE: All have worked on a one-standard coupler, first developing jointly a specification, then each manufacturer worked out a coupler embodying these specifications, with the result that these specification couplers were produced. These can all be improved and this could be kept going continuously and never arrive at a standard; we wish to get a standard as soon as possible.

MR. H. F. POPE: I think that the expense and time involved in trying to let each manufacturer make these two or three couplers will be out of proportion to the results obtained. Do not think that anything will be gained by allowing each manufacturer to make the selected couplers. If ours is not one of the couplers to be selected, I do not think we would want to manufacture the other couplers during the experimental stage. Let "A" make "A's" coupler, but allow that coupler to be supplied by either one of the other five manufacturers, if they get orders for same, the manufacturers ordering same from "A." Another method would be to have the trial couplers ordered through the committee and they would be acquainted at first hand where the couplers will be tried and the number that will be tried and it will then be able to order these couplers from the manufacturers without any publicity as to whose coupler it is.

MR. R. L. KLEINE: I would take it that you feel that the development stage is only in the beginning.

MR. H. F. POPE: I would not attempt to let other manufacturers make these couplers until we could get down to one.

MR. S. P. BUSH: If the question of trial is to mean just 200 I still adhere to my position that I do not think it worth while, or would it be wise, to have all the manufacturers make the couplers selected, but if it is going to assume a commercial aspect and a good many couplers are going to be purchased, then the other manufacturers should also make them.

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If two or three are decided superior in your judgment, it is not likely that you are going back and take up some that have been discarded, but will proceed with the selection of one or two. Then the manufacturers whose couplers are not selected might just as well get busy and learn how to make these patterns.

On the question of limiting the output, if it is so desired, your committee can still do that. If you will say to the manufacturer that you want so many couplers to go out and no more, they will not go.

MR. R. L. KLEINE: Our intention was a pretty general trial confined to locomotives as far as possible.

MR. A. A. POPE: Other manufacturers should be furnished with master gages and core boxes, and if not with these, they should be furnished with the castings for same.

MR. WILLIAM MCCONWAY, JR.: As far as the manufacture is concerned, I could not add anything to what has been said. With the patent features I did not have anything to do, and am not prepared or qualified to say what we would do. The man who would have the ultimate decision on this matter is on the ocean, and if I may have the indulgence of the committee five or six days I think that matter could be amicably arranged as far as patents are concerned. The validity of certain patents is a matter to be settled among the manufacturers themselves.

MR. R. L. KLEINE: Would your company be in favor of allowing other manufacturers to make your coupler should it be selected?

MR. WM. MCCONWAY, JR.: I have no reason to doubt but that the matter could be so arranged.

MR. S. P. BUSH: If your committee makes up your mind to have two or three couplers tried and they get out in large quantities, you will again be defeating to a certain extent the purpose to get only one coupler. Why can not we decide on the one coupler now?

MR. R. L. KLEINE: We can not do this as yet. We are not ready to say five, neither are we ready to say one.

The coupler committee retired and after carefully considering the reasons advanced by the coupler manufacturers against allowing the couplers selected for the general trial to be made by other than the owners, decided that only the owners of couplers selected for trial should make them during said trial unless the number placed in service should exceed 5000 of each type, after which it should be permissible for the other manufacturers to make the selected couplers. It is desired to place them in locomotive service generally by the different railroads.

Upon reconvening, the coupler manufacturers were asked how many couplers should constitute the trial.

MR. H. F. POPE: If it is limited to tenders, 1000 or 2000 should be the limit, but if made on freight cars, 5000.

MR. R. P. LAMONT: I think that is reasonable.

MR. WM. MCCONWAY, JR.: O. K.

MR. F. P. HUNTLEY: O. K.

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MR. S. P. BUSH: O. K. I think you will get satisfactory results from 1000 couplers on tenders, or on cars, 5000 of each type.

MR. M. B. GIBERSON: Agree with Mr. Bush's plan.

Mr. R. L. Kleine then announced that 5000 for each type of coupler was the amount agreed upon by the coupler committee.

MR. F. H. STARK: I hope that, in making the selection, those who are fortunate in having their design accepted will extend to the other fellow every courtesy possible and aid him in getting ready, so that when it is opened up free for all that they will be prepared for it. There should be complete harmony among the manufacturers. So far, four out of six manufacturers have agreed positively that they are confident that the matter can be arranged. It would be a good deal better if it was all understood to-day.

MR. F. P. HUNTLEY: The manufacturers only had one meeting, about a year ago.

MR. R. L. KLEINE: It is also desirable to reduce the weight of these couplers, if possible, to about 400 lb. It might be necessary to reduce the height of hub to 8 in. in order to accomplish this. From the tests we have made relative to permanent set of knuckle, we feel that we can probably get down to the 8-in. hub and obtain 180,000 lb. pull without permanent set. The specification coupler is a little heavy, which was the general comment at Atlantic City when the railway men looked over the coupler, and a 400-lb. figure would apparently satisfy them.

MR. R. P. LAMONT: Think that can be done.

MR. S. P. BUSH: If you will say definitely that you want the hub brought down to 8 in., I think you can approximate 400 lb. very closely. If we are going to leave it open, I think it will be necessary to come down to 8 in. That is, for 6 by 8 in. shank.

MR. R. L. KLEINE: We went over these couplers, all tests that have been made in the past, and we have come to the conclusion to try out two couplers, and they are the American Steel Foundries No. 3 and The National Malleable Castings Co. Bazeley couplers with the straight lock for general trial. We did not feel like giving up the wedge-lock principle, but we do not desire that the wedge lock be tried out in general service; we wished to confine the wedge-lock trials under the direct supervision of the committee. We will try out the wedge lock on the N. Y. C. and P. R. R. and other districts having heavy service referred to by Mr. Janney. The wedge lock decided on was The National Malleable Castings Company Bazeley coupler. Both couplers are to be furnished with either the straight line or No. 5 contour. I do not want the manufacturers whose couplers were not selected to think that the committee did not give due and very careful consideration to them.

I will expect the manufacturers to keep us posted as to how many of these couplers are ordered and where they go, so that the committee can follow them up to a reasonable extent. Should it occur that the number of 5000 will be exceeded, then it will become necessary to permit the other

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manufacturers to begin manufacturing the couplers. We expect that the manufacturers of these selected couplers will furnish drawings to the other manufacturers, so that they can look over the proposition and make such preparations as will be necessary.

No dissension on part of manufacturers.

MR. H. F. POPE: I will be perfectly willing to furnish patterns to the other manufacturers, or sell them to them if this limit goes beyond 5000.

MR. S. P. BUSH: At what load should the permanent set be taken?

MR. R. L. KLEINE: We are particularly concerned about the permanent set at "C" (knuckle opening) at both 200,000 and 400,000 lbs.

MR. H. F. POPE: Is there any time limit on this trial period?

MR. R. L. KLEINE: That will be up to the time of the next convention.

We are going to retain the couplers showing the development of the other manufacturers.

Each coupler manufacturer is to furnish patents (by numbers) involved in the specification couplers submitted. We also desire a record of all the patents each manufacturer owns or controls.

We will make tests of these couplers, both static and dynamic, and try them out on the coupling and jiggling machine. Jiggling tests to be made at American Steel Foundries and coupling tests at The National Malleable Castings Company.

MR. R. L. KLEINE: This height of hub for passenger cars will be gone into. We know that the 6-in. minimum will do it.

MR. S. P. BUSH: Are the selected couplers covered by patents?

MR. H. F. POPE: The patents involved in the Bazeley coupler covers:
Bearing of knuckle.
Bottom operating mechanism.
Relative strength of knuckle tail and head or lock.

MR. R. P. LAMONT: Three patents in our No. 3 coupler covers:
Knuckle-pin protector.
Protection of lock lifter, which recedes partially into head.
Anti-creep so mounted in head, no extra parts.
Lock-set on rear — patent pending.

MR. S. P. BUSH: We are very glad indeed to go on and coöperate as we said we would. We will do our utmost to further the general plan that you have outlined.

MR. F. P. HUNTLEY: Nothing further to say than what has been said.

MR. WM. MCCONWAY, JR.: As far as I know, we will go right along.

MR. M. B. GIBERSON: I have no doubt that our company will work right along and do everything possible to aid you.

The couplers considered in selecting the two couplers for the general trial in service were as follows:

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Adjourned.

Manufacturer and Coupler.	Type Lock.	Contour.	Coupler Designation.
A. S. Foundries No. 3 Modified Alliance	Straight	No. 5	Tc
A. S. Foundries Pinless Coupler	Radial Wedge	No. 5	Td
Buckeye Steel Castings Co. No. 4	Straight	Straight Line	Uc
Monarch Steel Castings Co. enlarged Lion	Straight	Straight Line	Vb
Gould Coupler Company, "GC"	Wedge on Knuckle Side	Straight Line	Wb
Gould Coupler Company, "GC"	Straight	Straight Line	Wc
The McConway & Torley Co. Penn. No. 3	Straight	Straight Line	Xc
The McConway & Torley Co. Penn. No. 4	Straight	No. 5	Xd
The National Malleable Castings Co., Bazeley	Wedge	Straight Line	Ye
The National Malleable Castings Co., Bazeley	Straight	Straight Line	Yf

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(38) HEIGHT OF COUPLER HEAD ABOVE CENTER LINE.

Minutes of Meeting of Representatives of Coupler Committee, American Steel Foundries and The National Malleable Castings Company, Held at Altoona, Pa., August 12, 1913.

The following were present:

S. L. Smith, A. J. Bazeley — The National Malleable Castings Co.
G. E. Scott, R. E. Janney — American Steel Foundries.

Representatives of M. C. B. Coupler Committee:
R. L. Kleine, Chairman; T. J. Boring, F. H. Blake.

This meeting was called for the purpose of determining upon the height of head above center line of the standard freight-car coupler, with particular regard for use of same coupler head on locomotive tenders and that it may couple to passenger cars and not have interference between tender coupler and passenger-car buffer, or vice versa, when the heights of coupler and bottom of buffer vary to opposite extremes, as in service a condition is sometimes present of having one coupler 31½ in. and the mating coupler 34½ in. above top of rail, therefore, provision for a 3-in. variation is necessary.

The ordinary distance from center line of passenger-car coupler to bottom of buffer is about 9½ in., subtracting the 3-in. difference in coupler height leaves 6½ in. for the height of coupler head above center line of its shank.

It would be well to keep the head as low as possible throughout its entire length, but, due to amount of lift required for the locking pin, this is often not possible, and where such is the case the head should be kept as low as possible back to the locking pin, or a safe distance, and then raised the minimum height to accommodate the lift of the locking pin.

With a locomotive not having a buffer coupled to a passenger car having a buffer, the passenger-car buffer at rest will extend from 2½ in. to 3½ in. (varying with standard platforms) back of the coupling or pulling face of the locomotive coupler, and with the draft gear of the car completely compressed (2½ in.), the buffer on the passenger car will then extend 5 in. to 6 in. back of the coupling or pulling face of the locomotive coupler, plus any slack in the contour lines, therefore, the minimum height of coupler head should extend about 6 in. back from the coupling point.

Since it is desirable to use the same coupler head on locomotives and freight cars, it is seen that the height of head for freight cars is limited by and should be designed to accommodate a condition of a locomotive coupling to a passenger car, in order to avoid the necessity of off-setting the coupler head below center line of coupler shank for use on locomotives, which would be very undesirable, since locomotive couplers are subjected to the most severe strains.

Previous to this meeting the American Steel Foundries and The National Malleable Castings Company were requested to prepare sketches

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showing how low it is possible for them to make the head of their specification couplers and the chairman had the situation as existing in service investigated on locomotives and passenger cars at Pittsburgh and Altoona on the Pennsylvania Railroad and Highbridge and Mott Haven Yard on the N. Y. C. & H. R. R. R.

The data collected and the entire situation was gone over and the following unsettled points decided upon:

1. The hub of the knuckle shall be 8 in. high.

2. The height of the coupler head above center line of coupler shank shall not exceed:

A — Locomotive Coupler: 6¾ in. for a distance of 6 in. back of coupling line.

B — Freight Car Coupler: 7¼ in. for a distance of 6 in. back of coupling line, but using same head as for locomotive coupler, the allowable increase (½ in.) in height for the freight car coupler is to provide for reinforcement of junction of top coupler ear to coupler head.

3. The head shall not be offset below center line of coupler shank.

4. The design of the coupler shank shall be the same in both experimental couplers; to be decided soon at a conference between the two coupler manufacturers and your chairman.

5. The weight of the complete couplers, 6 by 8 in. shank, 9⅛ in. butt, shall not exceed 400 lb.

(39) COUPLER SHANK, BUTT END AND KEY SLOT.

Minutes of Meeting of Representatives of Coupler Committee, American Steel Foundries and The National Malleable Castings Company,

Held at Alliance, Ohio, October 13, 1913.

The following were present:

Mr. R. E. Janney.....
Mr. E. P. Kinne..... } American Steel Foundries.
Mr. H. F. Pope.....
Mr. A. J. Bazeley..... } The National Malleable Castings Co.

Representatives of M. C. B. Coupler Committee:

Mr. R. L. Kleine (Chairman).

Mr. I. J. Justus, representing Mr. F. W. Brazier.

The meeting was held with the view of discussing the design of coupler shank, coupler butt and key slot, with the following results:

Coupler Shank, 6 by 8 in.:

The design of coupler shank as shown on American Steel Foundries drawing 03401, dated October 8, 1913, was accepted for the present. This includes thickness of the walls, the juncture of the shank to head and liner block.

The National Malleable Castings Company's drawings 11974, dated April 10, 1913; 11977, dated April 9, 1913, and 11971, dated April 8, 1913, were accepted for the present. These include the thickness of the walls, the juncture of the shank to the head and liner block.

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Coupler Butt:

The coupler butt to be 9⅛ in., with 1¼ in. vertical face for yoke gib. The coupler rivet holes and general design of butt the same as present M. C. B. Standard.

Key Slot:

The key slot was discussed at length and it was decided that a uniform standard should be adopted. The different forms of key attachments at present used specify various designs of key slots, and in order to arrive at a uniform standard the chairman agreed to take this subject up with the various parties interested and make such tests as may be necessary to determine the design and dimension of key slot that should be recommended.

Coupler Shank, 5 by 7 in.:

The shank to be the same as present M. C. B. Standard, with the exception of the juncture of the shank to the head, which is to be in accordance with drawings submitted for the representative couplers as follows:

American Steel Foundries, 03401, dated October 8, 1913.

The National Malleable Castings Co., 11971, dated April 8, 1913.

Coupler Butt:

Same as present M. C. B. Standard.

Key Slot:

Same as M. C. B. Standard.

NOTE.— As the chairman only has one set of these prints for the committee's file, copies are not enclosed, but will be furnished later. Full detail prints of the two couplers in question will be furnished all members — manufacturers and committee — as soon as the patterns are completed. Inasmuch as there is likelihood of there being some minor changes, it is not desired that the prints be distributed until final drawings are prepared.

(40) MARKINGS CAST ON THE TWO TRIAL COUPLERS AND NAMING THEM TYPE "A" AND TYPE "B" EXPERIMENTAL STANDARD M. C. B. COUPLER.

Since the joint conference on October 13, 1913, settled the final details of design on the two trial couplers, the coupler manufacturers were, therefore, pushing the metal patterns and core boxes to completion.

During the try-out period of the two selected committee specifications couplers it will be necessary to distinguish one from the other, since from the results of the trial either will be adopted as an M. C. B. Standard. Therefore, your committee has designated the coupler submitted by the American Steel Foundries, and selected, to be termed Type "A" Experimental Standard M. C. B. Coupler, and the one submitted by The National Malleable Castings Company, and selected, to be termed Type "B" Experimental Standard M. C. B. Coupler. When the trial or experimental period is completed, the word "Experimental" will be dropped, leaving the coupler finally selected or adopted as the Standard M. C. B. Coupler.

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The question arose as to possible difficulty in distinguishing the knuckle of No. 5 and No. 10 contour in either of the couplers. While the two contours as a whole on the coupler body alone are readily distinguishable, nevertheless two "A" or two "B" knuckles of different contour are somewhat similar, therefore a definite system of marking the parts was adopted (see Exhibits Nos. 27 and 28 for "A" and "B" couplers, respectively) at a meeting called for the purpose, as follows:

Minutes of Meeting of Representatives of Coupler Committee, American Steel Foundries and The National Malleable Castings Company, Held at Altoona, Pa., November 21, 1913.

The following were present:

O. W. Loomis, representing The National Malleable Castings Co.

E. P. Kinne, representing American Steel Foundries.

R. L. Kleine, T. J. Boring, representing M. C. B. Committee on Coupler and Draft Equipment.

The meeting was called for the purpose of definitely deciding upon the markings and locations of same, to be made as near uniform as possible on the two Experimental Standard M. C. B. Couplers.

The following was decided upon:

Coupler Body:

1. The manufacturer's name (abbreviation or initials) and "A" (or "B")-ES-MCB, indicating type "A" or type "B" Experimental Standard M. C. B. Coupler, must be cast on top of head central immediately back of contour lines. The "A" or "B" to be larger than the other letters and all letters to be raised with their top flush with top of coupler head, the panel to be depressed.

2. Words "Contour — 5 or 10" to be cast either on guard arm or coupler car.

3. Date cast (11-13) to appear on top of head immediately back of chain hole or back of knuckle pivot pin hole.

4. Location of trade-mark and other designating marks of the manufacturer to be optional.

Knuckle:

1. The manufacturer's name (abbreviation or initials) and symbols 5-A or 10-B, etc., as the specimen warrants, and ES-MCB to appear, preferably cast on knuckle, back of pin hole where same will not be worn off; in both cases the 5 or 10 to be separate from other lettering and conspicuous.

2. Date cast to appear on rear half of knuckle, preferably.

Lock:

1. Letter "A" or "B," indicating type, to be cast where same will not be worn off.

Lock Lifter:

1. Trade-mark to appear, style and location to be optional.

Knuckle Thrower:

1. Trade-mark to appear, style and location to be optional.

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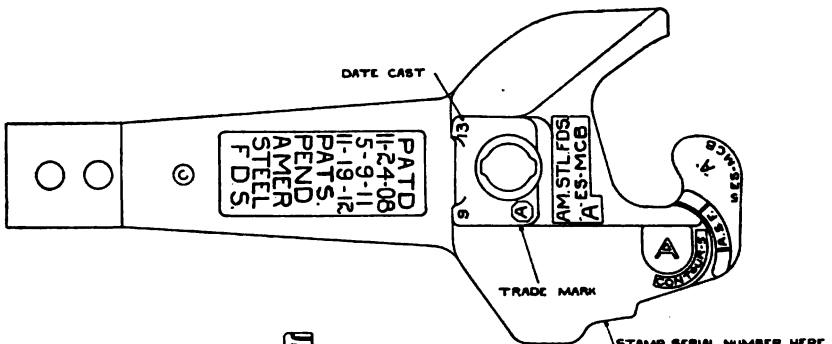
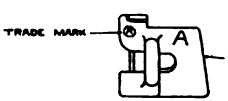
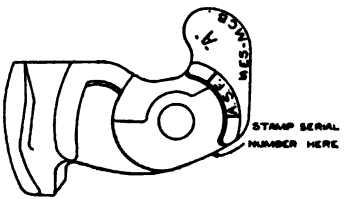
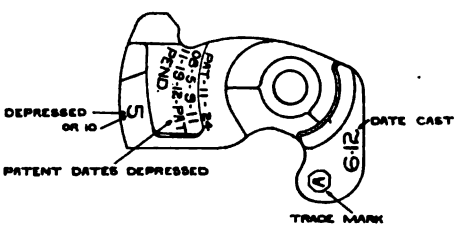




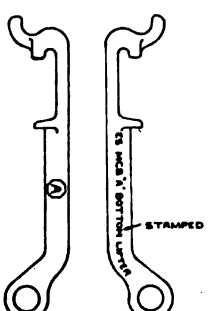
TOP VIEW OF LOCK.

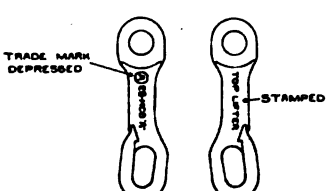


TOP VIEW OF KNUCKLE



BOTTOM VIEW OF KNUCKLE.





LOCATION OF MARKINGS
TYPE "A"
EXPERIMENTAL STANDARD
M C. B COUPLER

M.C.B. COMMITTEE ON
COUPLER + DRAFT EQUIPMENT
1914 REPORT

EXHIBIT No. 21

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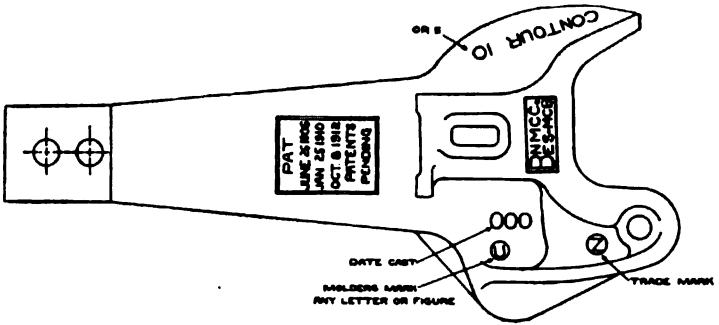
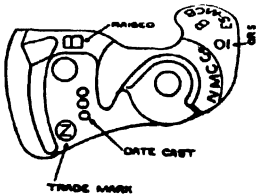
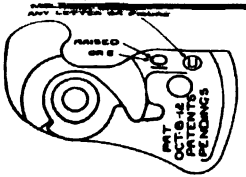


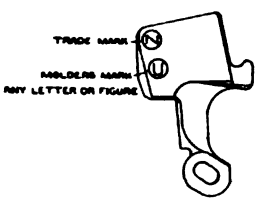


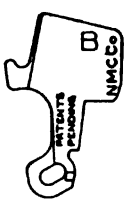
TOP VIEW



KNUCKLE

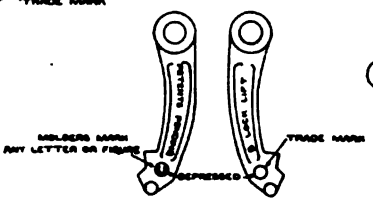
BOTTOM VIEW



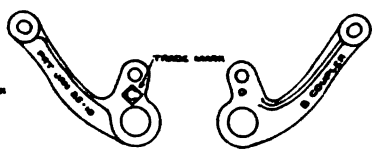


LOCK

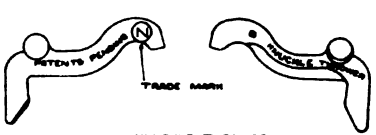
CASTING C
FOR BOTTOM LOCK LIFT



TOP LOCK LIFT



CASTING D
FOR BOTTOM LOCK LIFT



KNUCKLE THROWER

NOTE
ALL MARKINGS ON KNUCALE, LOCK
AND KNUCKLE THROWER TO BE DEPRESSED
UNLESS OTHERWISE NOTED
ALL OTHER MARKINGS TO BE RAISED

LOCATION OF MARKINGS
TYPE "B"
EXPERIMENTAL STANDARD
M C B COUPLER

M C B COMMITTEE ON
COUPLER + DRAFT EQUIPMENT
1914 REPORT

EXHIBIT Nº 28

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(41) KNUCKLE CONTOURS.

Having apparently settled all details or questions of dimensions, design, etc., the manufacturers of the two Experimental Standard M. C. B. Couplers were thus enabled to rush the metal patterns of same to completion and hence be in a position to fill orders for same and get the couplers into service as quickly as possible, which was desirable in order that some results would be available for the 1914 convention.

While these patterns were being completed, all possible shaving off of metal was being effected and minor details, such as radii, etc., were being finally decided and the manufacturers were beginning to submit blue-prints of the couplers to your committee. It was then brought out that the contour back of the pivot pin of the "A" and "B" knuckles in either the No. 5 or No. 10 contour was different. See Exhibit No. 29.

The contour of the knuckle of any coupler at this point is determined largely by the distance of the locking surface of the knuckle from the horizontal center line of the coupler, or rather the thickness and relative location of the locking block. The contour of a knuckle at this point, which is the line connecting its locking surface with the main contour of the coupler head near the ears of the bar, directly affects the operations of coupling and uncoupling and hence is very important. This point has been so regarded by the Association in the past, when in 1909 a requirement on knuckle contour was adopted by letter ballot. (See pages 109 and 576, 1909 Proceedings.)

Both manufacturers had good arguments in favor of their particular knuckle contours, and in order to exploit these and settle the points at issue, the following meeting was called for the purpose:

Minutes of Meeting of Representatives of Coupler Committee, American Steel Foundries and The National Malleable Castings Co., Held at Alliance, Ohio, January 7, 1914.

The following were present:

Mr. R. E. Janney.....	Representing American Steel Foundries.
Mr. E. P. Kinne.....	
Mr. O. W. Loomis.....	Representing The National Malleable Castings Co.
Mr. A. J. Bazeley.....	
Mr. R. L. Kleine (Chairman)...	Representing M. C. B. Committee on Coupler and Draft Equipment.
Mr. T. J. Boring.....	

The difference of the knuckle contours of the types "A" and "B" knuckles of No. 5 contour where it diverges from the contour of the coupler body having been brought to the attention of the two manufacturers, and the American Steel Foundries having objected to the "B"

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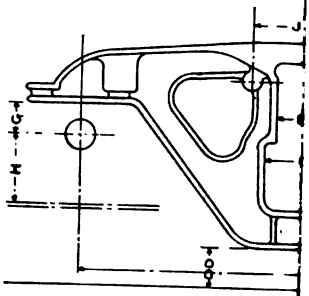
AT PRESENT MANUFACTURED FOR

TABULATION OF IM



RECOMMENDED DIMENSIONS		5'-6	1
ROAD	MFG'R	A	
A.T.&S.F	A.S.F	5'-4	13
"	"	-	-
A.B.&A	"	5'-6	1
A&W.P	"	5'-5	1
"	"	-	-
A.C.&Y	"	5'-6	1
ANN ARBOR	"	-	-
"	"	-	-
B&O	"	5'-4	13
"	"	-	-
"	BUCKEYE	-	-
B.&O.S.W.	BETTENDORF	5'-0	13
C&A.	A.S.F	5'-6	1
C.I.&L.	"	-	-
C.R.R. of N.J.	"	-	-
COAL&COKE	"	-	13
C.B.&Q.	BETTENDORF	5'-4	1
C.M.&St.P.	"	5'-0	13
"	"	-	-
"	"	-	-
"	"	5'-6	13
"	"	-	-
C.R.I.&P	"	-	1
"	"	-	-
C.&G.A.	"	5'-4	-
D.S.S.&A.	A.S.F	5'-6	-
"	"	5'-2	-
D.&R.G.	"	5'-6	-
"	"	-	-
D.L.&W	BETTENDORF	-	-
ERIE	A.S.F	5'-4	13
"	"	-	-
ESC.&L.S.	"	5'-5	14
GEORGIAN	"	5'-6	13
GULF&S.I	"	5'-2	13
HAR LINES	"	5'-6	13
"	"	-	-
I.C.	"	5'-4	-
"	"	"	-

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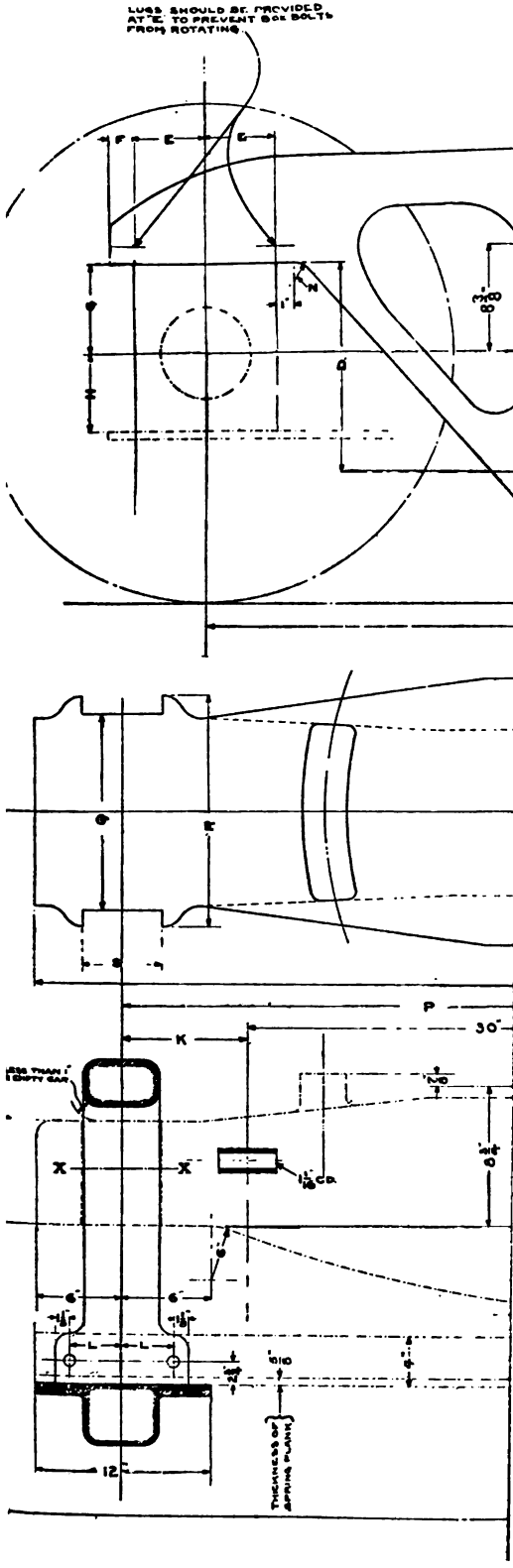

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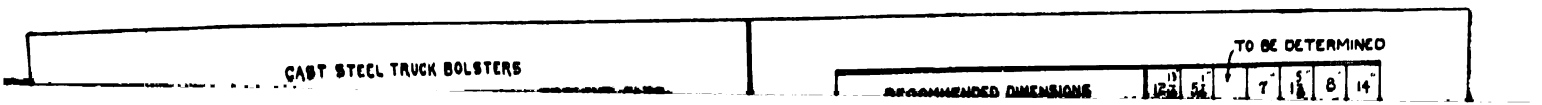

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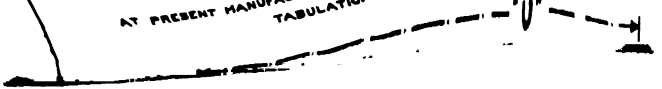
CAST-STEEL TRUCK BOLSTERS.
AT PRESENT MANUFACTURED FOR 100,000 POUNDS CAPACITY FREIGHT CARS.
TABULATION OF IMPORTANT DIMENSIONS.



RECOMMENDED DIMENSIONS.		12 15/16"	5 1/4"		7"	13 5/8"	8"	14"
ROAD	M.F.G'R	Q.	S	U	V	W	X	Y
M.K.&T.	A.S.F.	12 7/8"		60°	6"	1 1/8"	7"	15 3/8"

TO BE DETERMINED.

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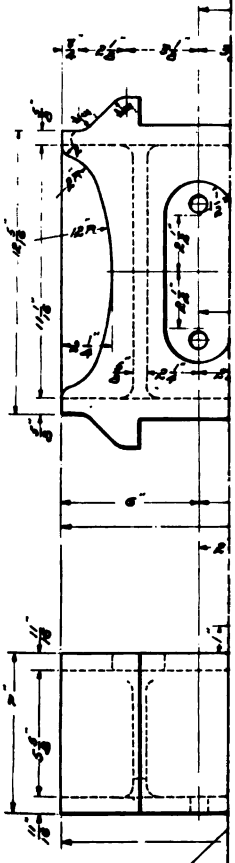

NOTE:-
WHERE ANTI-FRI
ARE DESIRED FLAT S
ARE TO BE OMITTED.

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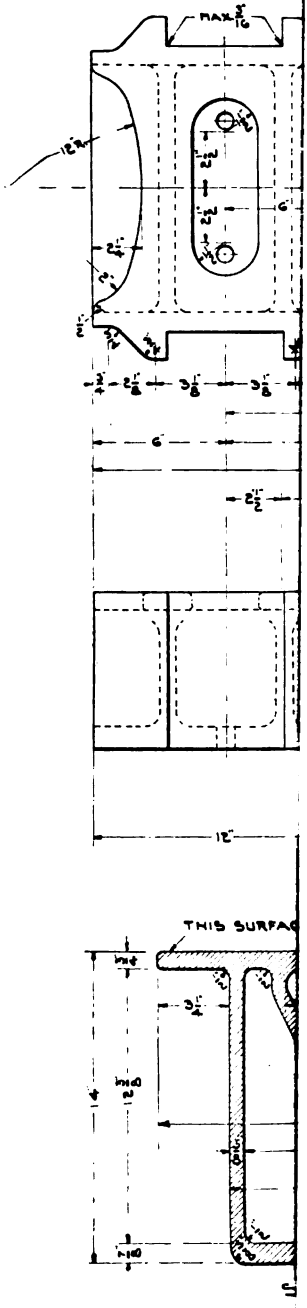

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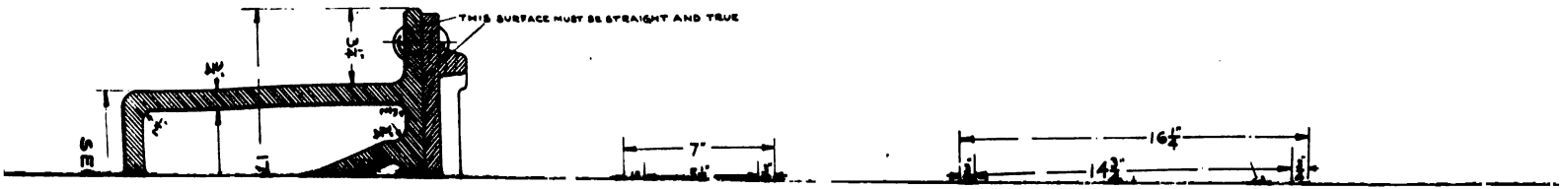

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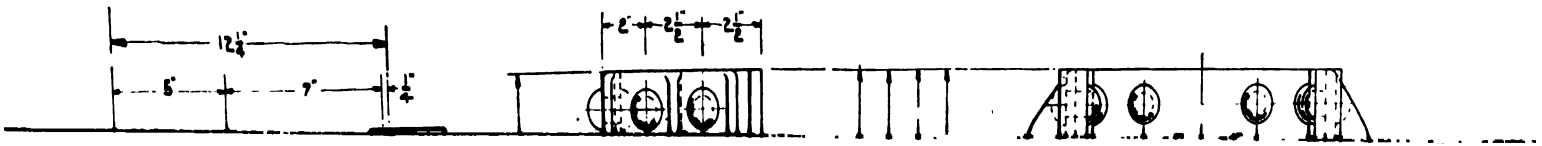

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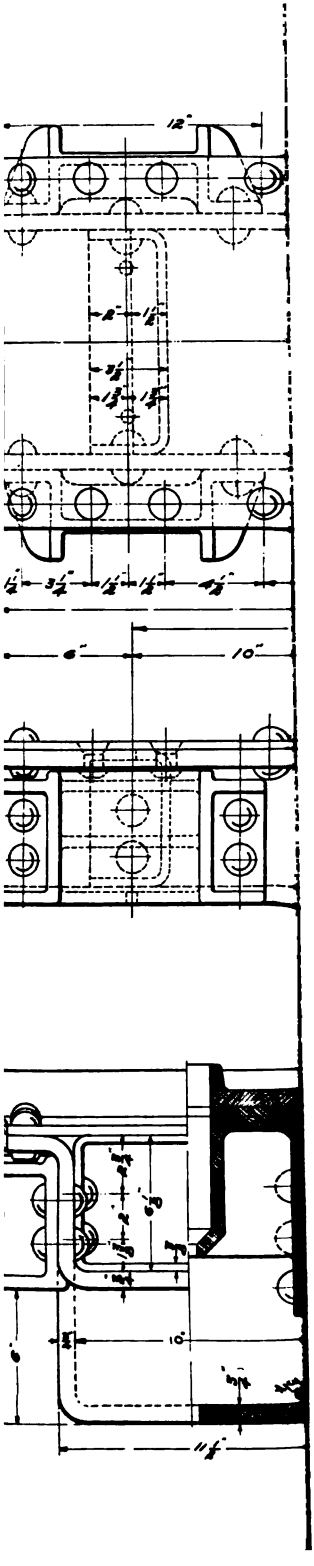

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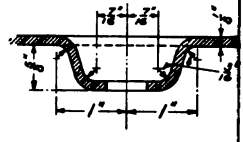

SECTION SHOWING
RECESS FOR BOLT HEAD
IN SPRING CAPS

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M. P. 479 D

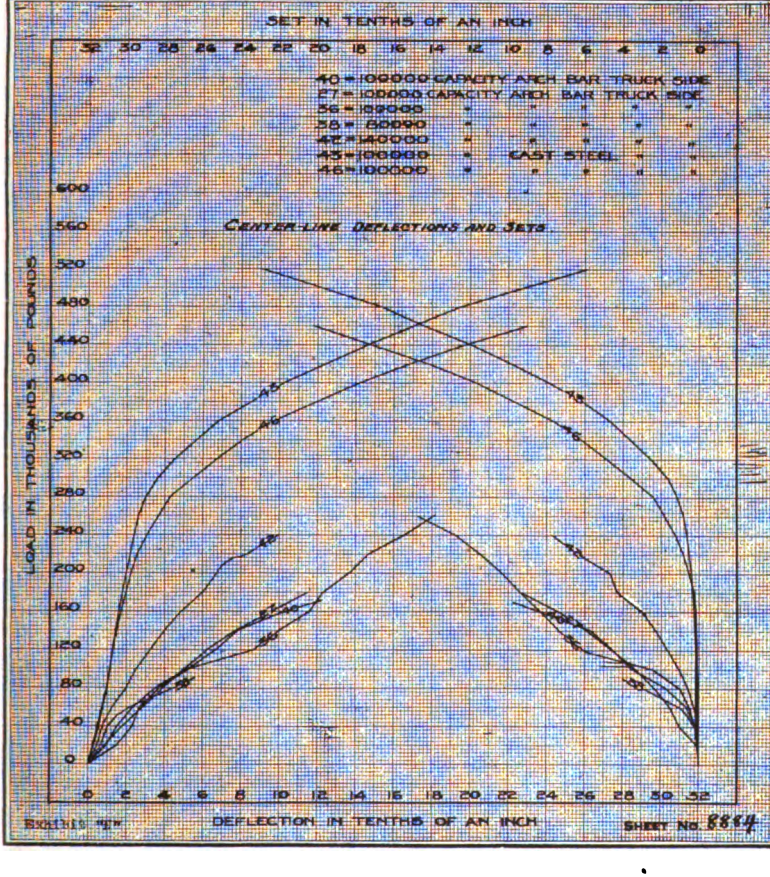
8 x 10½
11-30-12

PENNSYLVANIA RAILROAD COMPANY

PHILADELPHIA, BALTIMORE & WASHINGTON RAILROAD COMPANY
NORTHERN CENTRAL RAILWAY COMPANY
WEST JERSEY & SEASHORE RAILROAD COMPANY

SHEET No. 8884 — TEST DEPARTMENT — REPORT No. _____

TRUCK SIDES – COMPARATIVE TESTS OF CAST STEEL AND ARCH-BAR TYPES. ALTOONA, PA. 4-24-14



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M. P. 470—B

SEJ 5-11-14
2 x 1914

PENNSYLVANIA RAILROAD COMPANY

PHILADELPHIA, BALTIMORE & WASHINGTON RAILROAD COMPANY
NORTHERN CENTRAL RAILWAY COMPANY
WEST JERSEY & SEASHORE RAILROAD COMPANY

SHEET No. 8976 TEST DEPARTMENT REPORT No.

Truck Sides Comparative Tests of Cast Steel & Arch-Bar Types ALTOONA, PA. 5-11-14

DESCRIPTION OF TRUCK SIDE FRAMES TESTED
(See Exhibit "E" for Results)

Test No.	Capacity Lbs.	Size of Arch Bar, In. Top	Bottom	Size of Tie Bar Ins.	Diam. of Journal Box Bolts	Diam. of Column Post Bolts	Railroad
27	100,000	5x1-1/4	5x1-1/4	5 x 3/4	1-1/4"	1-5/4"	P.R.R.
36	100,000	6x1-1/4	6x1-1/4	5 x 5/8	1-1/4"	1-5/4"	B.& O.
38	80,000	5 x 1	5x1-1/4	4-1/2x5/8	1-1/8"	1-1/2"	C.& N.W.
42	140,000	6x1-3/4	6x1-3/4	6 x 3/4	1-3/8	2-1/4	P.R.R.
43))-	See Photograph No. 3007, Pattern No.F-4394-B						
46)							
49	100,000	5x1-1/2	5x1-1/2	5 x 5/8	1-1/4	1-3/4	M.C.B.

Exhibit "O"

SHEET No. 8976

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Exhibit P.— 100,000-lb. Capacity Cast-steel Truck Side Tested.

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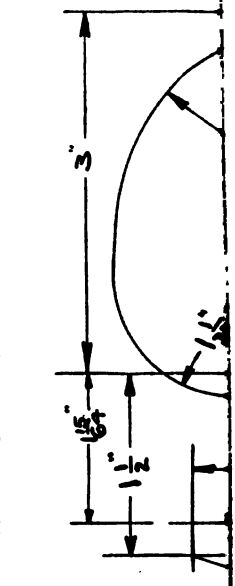

FACE OF BAR

N.M.C.CO. 12

A.S.F. 03

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knuckle of No. 5 contour, this meeting was called for the purpose of settling this question and to inaugurate a series of tests of the two Experimental Standard M. C. B. Couplers on the service-testing machine at the Alliance works of the American Steel Foundries.

Mr. Bazeley demonstrated by a set of wooden templates that the "A" knuckle of No. 5 contour at the higher angles of center line divergence or curving gave a condition of binding or hooking in uncoupling which was not present in the "B" knuckle of No. 5 contour, but the "A" knuckle on a straight track keeps contact slightly longer between its nose and the tail of the mating coupler in coupling than the "B" knuckle of No. 5 contour.

Mr. R. E. Janney claimed that this hooking feature in the No. 5 contour in uncoupling had never given them any trouble whatever during a long service test.

It was agreed that the "A" knuckle of No. 5 contour is slightly more desirable for coupling operations and the "B" knuckle of No. 5 contour is somewhat better for uncoupling operations, but since the effect of these differences in the steel specimens are slight, the manufacturers shall continue to furnish the knuckle-tail contours as at present, with the final shape to be determined by the service trials.

ISSUANCE OF M. C. B. CIRCULAR NO. 16, 1913-1914, DATED CHICAGO, ILL., NOVEMBER 25, 1913.

(42) Your committee, having completed sufficient details pertaining to the types A and B-E. S.-M. C. B. Couplers at the October and November meetings, prepared and had the secretary of the Association issue Circular No. 16 to the members, with which, no doubt, all the members are familiar and which was issued in continuation of the policy outlined and approved at the 1913 convention.

The circular gave a brief outline of the work since the last convention, recommended and urged that the members make a service trial of the two couplers in both contours and also gave instructions relative to ordering the couplers, following the trials and reporting upon same. Cuts of both couplers and their parts (see Exhibits Nos. 25 and 26), including general dimensions, were given, as well as a cut showing Nos. 5 and 10 contours superimposed upon the present M. C. B. (1904) Standard Contour Line. (See Exhibit No. 30.)

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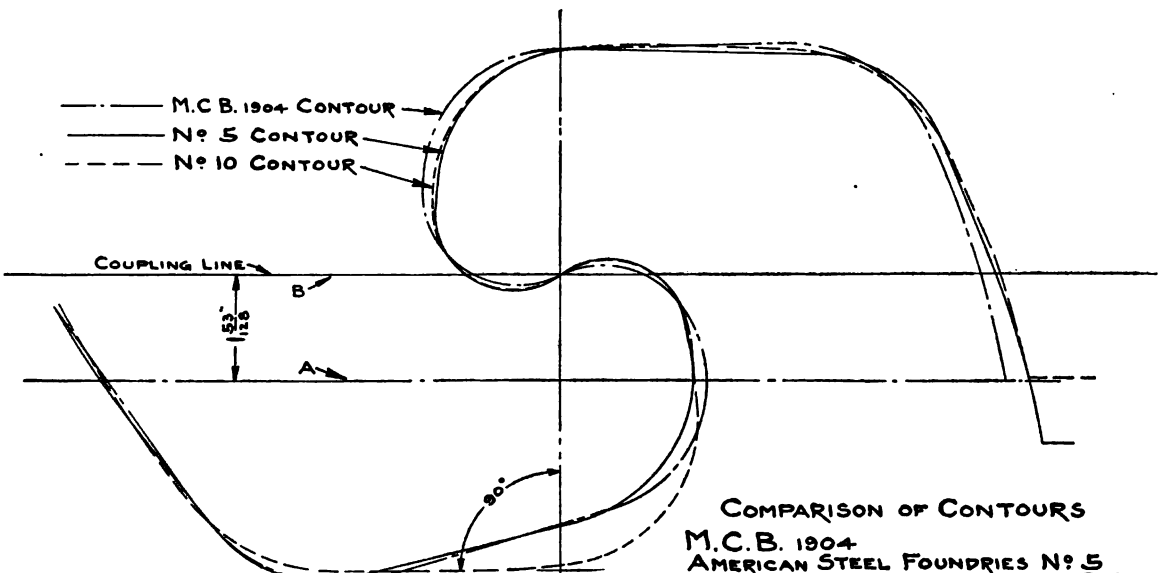

A = CONSTRUCTION LINE FOR M C B. 1904 CONTOUR
B = " " " " Nos. 5 & 10 "

COMPARISON OF CONTOURS
M.C.B. 1904
AMERICAN STEEL FOUNDRIES No 5
THE NATIONAL MALLEABLE CASTINGS CO. No 10
1914 REPORT

EXHIBIT No 30.

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DISTRIBUTION OF BLUE-PRINTS OF THE "A" AND "B" COUPLERS.

(43) It will be seen by referring to the minutes of the joint meeting held on July 15, 1913, that all the coupler manufacturers will participate in the manufacture of the E. S.-M. C. B. couplers should the number placed in trial exceed 5000 of each as well as after the adoption of a standard. It was also agreed that the owners of the two couplers selected for this trial would furnish blue-prints of same to the other manufacturers in order that they could prepare for such a contingency.

Accordingly the chairman of your committee received full sets of detail prints of both the "A" and "B" coupler during the fore part of January, 1914, and distributed them to each member of the joint committee. Minor changes not altering design have caused reissue of practically all the prints, and these have likewise been distributed.

TESTS OF "A" AND "B" COUPLERS ON SERVICE-TESTING MACHINE.

(44) These tests were inaugurated on a machine at the Alliance works of the American Steel Foundries at the joint conference held there on January 7, 1914, primarily to try out the knuckle contours for coupling and uncoupling, but particularly to test the lasting qualities and efficiency of the operating parts, learn the location, extent and effect of wear of same and ascertain if any changes, however slight, are necessary or desirable in the couplers. While this machine does not administer shocks, it brings out conditions of wear in a week's time that would take several years' service on the road to produce if shocks were ignored.

The machine consists of two carriages on an inclined track, each having one coupler mounted level thereon, similar to a freight car, and being electrically driven. The top coupler always remains locked, the lower coupler starts up the incline with knuckle completely open, couples to top coupler, continues upward about 1 ft., during which it is lock-set; the lower car about that time is released by the chain drive, recedes from the top car, which is restricted by a cable, starts down the incline, during which the knuckle is thrown closed and then thrown open before the car is stopped by a buffer. This constitutes one operation or cycle as registered on the stroke counter, and the normal speed is five to six operations per minute. (See Exhibits Nos. 31 and 32.)

Two type "A" couplers of No. 5 contour were tested together and two type "B" couplers of No. 5 contour were tested together. Each of these tests were run through 30,000 cycles, each of which, as described above, consisted of the following operations for the lower or operating coupler: coupling, lock-setting, uncoupling by withdrawing from other coupler, knuckle pushed to closed position by a lever, then knuckle thrown completely open by uncoupling rod. Assuming a freight-car coup-

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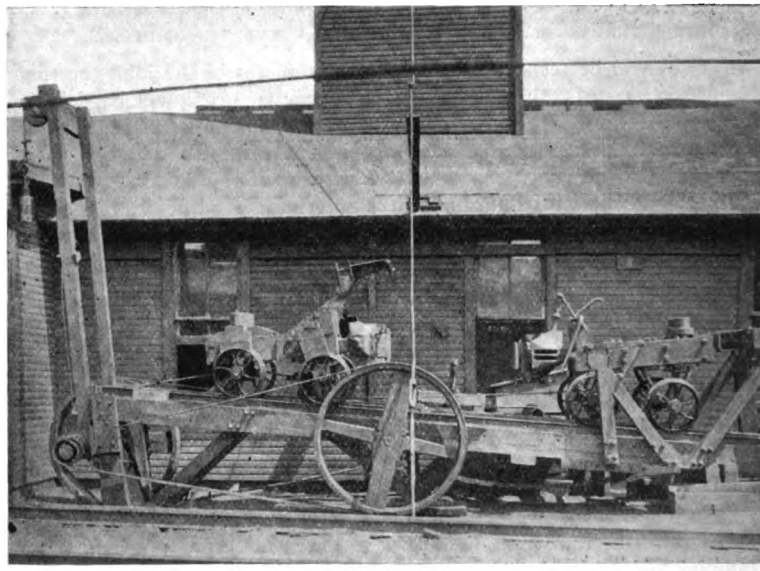

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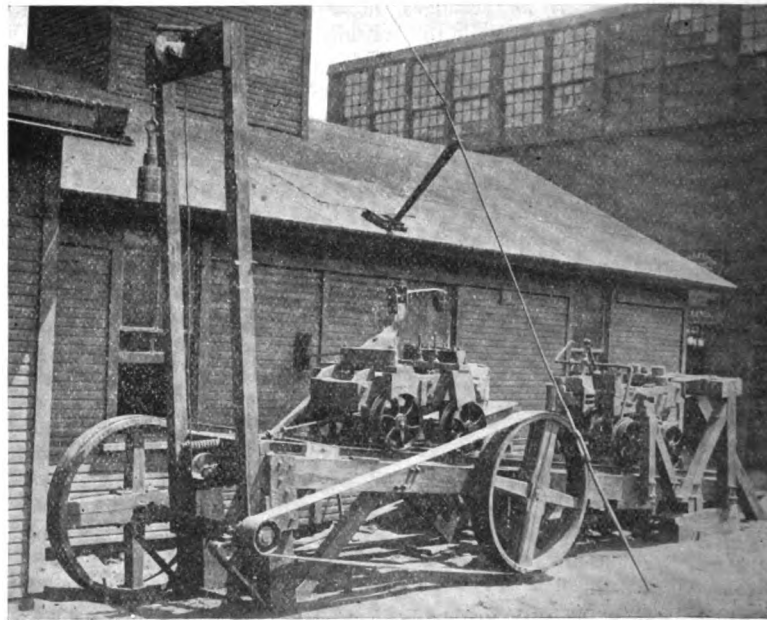

EXHIBIT No. 32.

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ler in service will average daily (365 days to a year) the operations here listed as one cycle, these tests each represent 82 years' wear, disregarding effects on operating parts due to strains received in regular service.

Each operating coupler tested was, beforehand, laid off, measured and notes taken on various parts, dimensions and features that were liable to be affected during the tests and very moderately oiled only at this time. Daily logs were taken and the couplers were very carefully and minutely examined after every 10,000 cycles, recording the results and conditions then found by comparing with the various measurements and notes originally made. The tests were conducted under the direct supervision of your committee, whose representative, together with those of the American Steel Foundries and The National Malleable Castings Co., was present during the entire time. All the coupler manufacturers were invited to attend the tests. The machine was out of doors under a shed and severe cold weather obtained during the trial until completion on March 5, 1914.

The results of the tests were very satisfactory and favorable to both couplers. The operating parts naturally were considerably worn, but after each test the couplers were operative in all features with scarcely any impairment of efficiency. New parts were substituted for the worn parts, trying out all combinations, and it was found that the couplers were fully operative. Some minor changes were shown to be desirable and these have been made. This was a very severe test and your committee is firm in the belief that not any of the present standard couplers in general use to-day would meet it.

After each test a final examination and record was made and the couplers were expressed to Altoona and mounted on a rack for study and exhibition purposes. These couplers are now on exhibition at the booth of your committee just back of the convention hall, for the benefit of the members, who are invited to visit the booth, inspect and discuss these and the other couplers in the exhibit.

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(45) TYPES "A" AND "B," E. S.-M. C. B. STANDARD COUPLERS ORDERED TO DATE BY VARIOUS RAILROADS AFTER ISSUANCE OF M. C. B. CIRCULAR No. 16, 1913-1914.

Type "A" Couplers.					Type "B" Couplers.		
Date Order.	Number with Contour.		Pilot Couplers.	Railroad.	Number with Contour.		Pilot Couplers
	No. 5.	No. 10.			No. 5.	No. 10.	
9-26-13	2	.....	.....	G. N. Ry.....	.....	.....	.....
11-24-13	25	25	.....	N. & W.....	25	25	.....
12- 2-13	350	350	.....	N. & W.....	350	350	.....
12-16-13	6	.....	6	E. J. & E.....	.....	.....	.....
12-29-13	46	46	8	Oregon Short Line.....	46	46	8
12-30-13	12	.....	.....	Northwestern Pac.....	.....	.....	.....
1-20-14	1	.....	.....	Nor. Pac.....	.....	1	.....
1-20-14	6	6	.....	M. St. P. & S. S. M.....	6	6	.....
1-22-14	2	.....	.....	A. T. & S. F.....	.....	.....	.....
2- 4-14	3	3	.....	G. R. & I.....	3	3	.....
2-23-14	2	2	.....	N. & W.....	2	2	.....
2-23-14	4	4	.....	Virginian.....	4	4	.....
3- 7-14	6	6	.....	A. C. L.....	7	6	.....
3-13-14	3	3	.....	Intercolonial.....	.....	.....	.....
3-14-14	5	5	.....	D. & R. G.....	5	5	.....
3-18-14	25	25	.....	P. R. R.....	25	25	.....
4- 1-14	5	5	.....	N. & W.....	30	5	.....
4- 1-14	10	10	.....	Ill. Cent.....	10	10	.....
4-23-14	4	4	.....	C. R. I. & P.....	4	4	.....
.....	.....	.....	.....	Southern.....	10	.....	.....
.....	.....	.....	.....	Erie.....	.....	2	.....
.....	.....	.....	.....	C. & O.....	5	5	.....
4-17-14	10	10	.....	Sou. Pac.....	.....	20	.....
.....	25	25	.....	C. M. & St. P.....	25	25	.....
	552	529	14	Totals.....	557	544	8
	1095				1109		
	Grand Total 2204						

Note.— Several railroads ordered repair parts.

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Since the tests of the types "A" and "B" couplers on the service-testing machine at Alliance, Ohio, during January and February, 1914, was to show the location, extent and effect of wear of the operating parts of the couplers and point out any changes that may be essential, all of which was in advance of the trials in road service, it was desirable and advantageous to your committee and the purchasers, and also to expedite the conclusion of the trial period, that the above orders be not filled until after these changes were made. This was accordingly carried out, with the exception of the large order for the N. & W. Ry., who were in a hurry for their couplers to complete the 90-ton steel gondola cars then building. Some of this order were made from wooden patterns and were very good castings, considering this fact.

STENCILING OF FREIGHT CARS EQUIPPED WITH EXPERIMENTAL STANDARD M. C. B. COUPLERS.

(46) While M. C. B. Circular No. 16, 1913-1914, included information as to the marking or lettering which is being cast on both types "A" and "B" Experimental Standard M. C. B. Couplers, no recommendations were made at that time relative to stenciling of cars so equipped.

Your committee believes it desirable for the Association to have a uniform stenciling for freight cars equipped with the Experimental Standard M. C. B. Couplers so that they can be maintained and readily identified by all car inspectors and repairmen, thereby schooling the latter and others in line with the adoption of the standard M. C. B. coupler, as well as assist your committee during the trial period. The stenciling should designate between the types (A or B) and between the contours (No. 5 or No. 10), and we would recommend the adoption of stenciling as follows, which is the same as the marking cast on the couplers:

"A 5" E. S.-M. C. B. Coupler.
"A 10" E. S.-M. C. B. Coupler.
"B 5" E. S.-M. C. B. Coupler.
"B 10" E. S.-M. C. B. Coupler.

A or B represents the type of the coupler.

5 or 10 represents the number of contour embodied in the particular coupler.

E. S. represents Experimental Standard.

After the adoption of the standard M. C. B. coupler, the A or B, 5 or 10 and the E. S. will be dropped from the lettering on both the coupler and the car and substitute the word "standard," or its abbreviation, "St'd."

For No. 5 contour see Exhibit No. 33.

For No. 10 contour see Exhibit No. 34.

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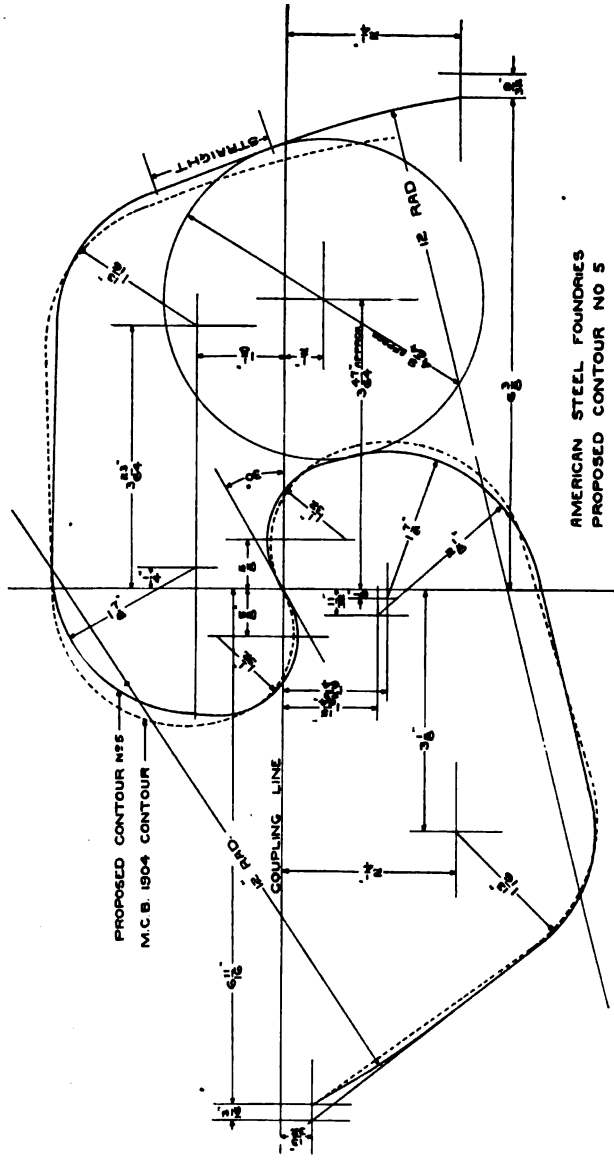
STRAIGHT
12 RAD
PROPOSED CONTOUR No 5
M.C.B. 1904 CONTOUR
COUPLING LINE
AMERICAN STEEL FOUNDRIES
PROPOSED CONTOUR NO 5
ANGULAR DISPLACEMENT
NO 5 COUPLED WITH NO 5 = 16½°
NO 5 " - M C B = 14°45'
M.C.B " - M C B = 15½°

EXHIBIT NO 23

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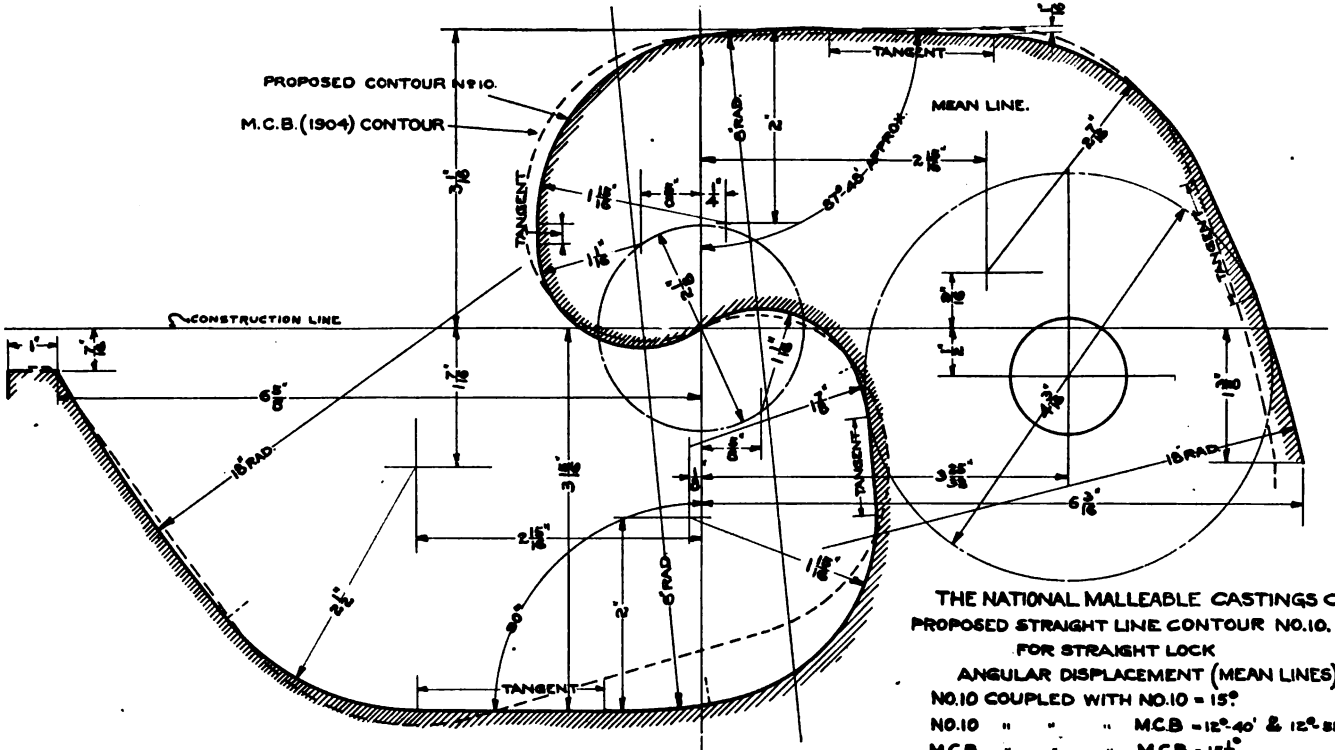

THE NATIONAL MALLEABLE CASTINGS CO

PROPOSED STRAIGHT LINE CONTOUR NO.10.

FOR STRAIGHT LOCK

ANGULAR DISPLACEMENT (MEAN LINES)

NO.10 COUPLED WITH NO.10 = 15°

NO.10 " " " M.C.B. = 12°-40' & 12°-55'.

M.C.B. " " " M.C.B. = 15 1/2°.

EXHIBIT NO. 34.
1914

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DESIGNING BUTT END AND KEY SLOT FOR 6 BY 8 IN. SHANK TO ACCOMMODATE VARIOUS DRAFT ATTACHMENTS.

(47) Pursuant to understanding reached at joint meeting held at Alliance, October 13, 1913, on shank design, the chairman, on October 15, 1913, wrote all the known draft attachment manufacturers on the subject, stating in part that your committee is about to establish the standard for the butt end and key slot for the 6 by 8 in. shank coupler, which necessarily will have to differ somewhat from the present M. C. B. standard for the 5 by 7 in. shank coupler, especially the key slot or distance through the key slot, on account of the taper of the shank having been increased by beginning at the rear instead of at the forward edge, in order to strengthen the shank.

These manufacturers were requested to furnish blue-prints of their various attachments, as well as the design of key slot and coupler butt, which they recommend to be used therewith, also results of any tests they had made on the attachment.

The following attachment manufacturers were written to and all but one replied:

Commonwealth Steel Company.
Forsyth Brothers Company.
KeYoke Railway Equipment Co.
The Buckeye Steel Castings Co.
The National Malleable Castings Co.
T. H. Symington Co.
Universal Draft Gear Attachment Co.
W. H. Miner.

The following recommendations or suggestions were received, the reason not stated in all cases:

1. Not to increase width of butt end over present standard of 5 in., nor present width, 5 in., of key.

2. Key slot to be located 5 in. from rear of coupler butt instead of 4 in. as at present, and to be made sufficiently large for 7 by 1¼ in. key.

3. Rivet holes for securing ordinary yoke to coupler be increased to three in number to compensate for increased strength of drawbar.

4. Increase length of coupler, measured from striking horn to rear of butt, to 25 in. instead of 21¼ in. as at present.

5. Allow 2 in. clearance between slot reinforcements on inside of bar instead of 1¾ in. as at present.

6. Increase thickness of key from 1⅛ in., present standard, to 1¾ in., and increase ribs supporting reinforcement inside bar from ¾ in. to 1 in.

7. Key should be stronger at its elastic limit and ultimate than the knuckle and have slightly greater strength than the weakest part of the coupler head.

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8. Heat-treat keys and study condition of keys in service to determine best allowable bearing stresses and arrive at proper distance through slot.

9. Increase width of butt end from 5 in. to 6 in., beginning taper same as at present.

Some data on tests and stresses was also furnished your committee, and it will all receive due consideration, but the work on the coupler itself has been so pressing that the question of draft attachment has not been taken up any further. As shown in M. C. B. Circular No. 16, it has been decided that the taper of the 6 by 8 in. shank will begin at the rear of the butt end, and until a standard butt end with key slot is designed for the 6 by 8 in. shank, as well as limiting dimensions for attachments of coupler to draft gear, the type of butt end and key slot desired by the railroads will be furnished by the coupler manufacturers. It is also contemplated to develop specifications and tests for draft attachments. Your committee will be glad to discuss these questions with any of the members or manufacturers at our exhibition booth, or otherwise.

PATENTS INVOLVED IN THE EXPERIMENTAL STANDARD M. C. B. COUPLERS.

(48) There are, unavoidably, patents involved in both types "A" and "B" Experimental Standard M. C. B. Couplers, and they were, on April 6, 1914, submitted to ascertain the scope and validity of same. When this report is received the matter will be referred to the Executive Committee.

PROGRAM OF TESTS FOR ENSUING YEAR.

(49) After the close of the convention the following tests of the A and B couplers will be conducted under the direct supervision of your committee:

Dynamic and static.
Angling and coupling.
Jiggling or lock-creeping.
Service machine.

DYNAMIC AND STATIC.

(50) Several each of the A and B couplers, including both 5 by 7 in. and 6 by 8 in. shank and both Nos. 5 and 10 contour, will be subjected to the present standard M. C. B. tests — strike, guard arm, jerk, pulling, separate knuckle strike and jerk, and other tests. These couplers will be tested similar to the series of tests of present couplers reported on last year (see pages 127 to 140, inclusive, 1913 Proceedings), viz., by laying off the couplers as per Exhibit No. 1 and measuring after each drop or increment of load. These tests will thoroughly test the design and will be compared with each other, with the past tests and with the results of the general trial now under way in service.

From these tests a set of specifications and tests will be developed for future purchases of the standard M. C. B. coupler after its adoption, and since this series of tests will thoroughly test and settle the design, future tests upon purchase need only be for quality of material and workmanship, which will effect a saving to both purchaser and manufacturer.

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ANGLING AND COUPLING TESTS.

(51) These tests will be made at the Cleveland works of The National Malleable Castings Co. on a machine specially built for determining the greatest possible degree of horizontal angling between two couplers and for testing coupling operations between them when in line or at any angle. Both types "A" and "B" couplers in both Nos. 5 and 10 contours will be tested, using all mating combinations liable to be met in service, such as with themselves, with each other and with present standard M. C. B. (1904) contour, etc., and any defects in the knuckle contours will also be brought out. The tests will be conducted and reported on similar to those made in March, 1913, when the straight-line contour No. 10 and M. C. B. standard were tested (see pages 183 to 187, inclusive, 1913 Proceedings, for results and description of machine).

JIGGLING OR LOCK-CREEPING TESTS.

(52) These tests will be made at the Alliance works of the American Steel Foundries on a machine specially built to impart vibrations and lock-creeping conditions to couplers under tension, and determine if the locks will creep, and, if so, the reliability and efficiency of the lock-to-the-lock or anti-creep device or feature embodied in the coupler. The tests will be conducted and reported on similar to those made in January, 1913, on two Krakau wedge-lock couplers. (See pages 180 to 182, inclusive, 1913 Proceedings, for results and description of machine.)

SERVICE-TESTING MACHINE. FINAL TESTS.

(53) Since the former or original tests of the A and B couplers made on this machine during January and February, 1914, pointed out that certain minor changes in both couplers were desirable, as previously described, and these changes were made before filling orders for couplers, it is the intention to make final tests of both couplers in this machine.

These tests will determine to what extent the changes made were a benefit and will give final results on the durability and efficiency of operating parts and give information as to what may develop in the general trial in service and can be compared with same.

FOUNDRY GAGES FOR THE STANDARD M. C. B. COUPLER.

(54) With the adoption of a one-standard M. C. B. coupler, a proposition arises in connection with the manufacture of the couplers, viz., the manufacture and interchangeability of parts of same design of coupler being successfully accomplished by a number of different manufacturers.

It is a fact that coupler patterns, core boxes and castings require close attention and systematic gaging, and that some coupler manufacturers give more time and pains to this feature than others, but the one giving the most attention thereto encounters less trouble and gets better results.

With the advent of the standard M. C. B. coupler these practices will have to be uniform, especially in the question of gages, in order that

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interchangeability of parts made by different manufacturers will be accomplished.

Should the number of each E.S.-M. C. B. coupler ordered for service trial exceed 5000, your committee will, in conjunction with the coupler manufacturers, design and adopt the necessary gages and practices for this contingency.

DRAFT GEAR.

(55) On account of the entire time of your committee having been taken up with the one standard coupler, it was unable to give consideration to the draft-gear question.

HEAT TREATMENT AND ALLOY STEELS.

(56) It is generally acknowledged, and the wide investigations of coupler conditions and the results of the various tests conducted by your committee demonstrates beyond a doubt, that the present coupler is inadequate in strength to meet the ever-increasing demands placed upon it, consequently considerably curtailing its life. There seems to be one expediency which may be resorted to in order to prolong the life of the present couplers, and that is by increasing the elastic limit of the material by the use of heat treatment and also alloy steels.

These have been experimented with by several railroads and coupler manufacturers with good but as yet uncertain results, but are only temporary relief measures because the coupler parts, and especially the bearing areas, are small and endeavor to worm their way out from under the load imposed, which is in addition to the fact that the designs of present couplers leave much to be desired.

As stated last year, and from results of its investigations, your committee has deemed it desirable to design the standard M. C. B. coupler on the basis of the present commercial steel, reserving the advantages to be gained by heat treatment and alloy steels for future strengthening of the coupler or detail parts.

ADOPTION AND REALIZATION OF A ONE STANDARD M. C. B. FREIGHT-CAR COUPLER.

(57) Your committee, since being assigned this problem at the 1911 convention, has worked to the end of establishing a one standard coupler with as little delay as consistent to the proper development of the situation, and each intervening year has reported the progress of the work, which has been approved by the Executive Committee and the members of the Association. It is readily seen, from the reports of the work thus far accomplished and from the contemplated tests outlined, that whichever coupler is adopted, the Association will have not only a standard long desired, but one meeting all conditions and requirements, arrived at by a most thorough system of investigations and tests and assisted by experienced representatives of the coupler manufacturers, the latter having given and placed at the disposal of your committee the entire strength of their organization.

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Having arrived at a certain point in this work following the 1913 convention, and as indicated thereat, your committee prepared and had issued Circular No. 16, 1913-1914, dated November 25, 1913, from the Committee on Coupler and Draft Equipment of the Master Car Builders' Association, wherein we reported to the members the progress made to date in the work of designing the standard M. C. B. coupler, and stated that we had reached the stage of having two couplers, types "A" and "B" Experimental Standard M. C. B. Couplers, to recommend to the members for a general trial in service and urged all the railroads to put in service a number of each of these two couplers, preferably on locomotives, on which the severe service rapidly brings out any existing defects and gives quick results in a test. As all the members are no doubt aware, the circular also gave cuts of the couplers and contour lines and instructions relative to ordering the couplers, following the trials and reporting on same, etc.

Since it is principally from the results of these trials in general service that either type "A" or type "B" coupler, or either with slight changes, will be adopted by the Association as a standard, it devolves upon the members to enter into the spirit of the undertaking and each do his share toward furthering the project, and this share consists principally in ordering some couplers, placing them in service and noting the results.

The members were not placing orders for these couplers as rapidly as desired nor in a manner that would furnish results to this year's convention, so your committee had printed and mailed on April 22, 1914, a letter to the mechanical officers of about sixty of the larger railroads which had not ordered any of the couplers for trial. This letter respectfully called attention to Circular No. 16 and its purpose, with the advice in part that "the orders for these couplers are not coming in very freely, many of the larger roads and others where particularly severe service is encountered have not yet placed orders for any of these couplers. It is very essential that, after your committee has designed two couplers for trial from which the final standard coupler will be adopted, the railroads in general should place them in service not only to enable themselves individually to properly judge in the end between the merits of the couplers, contours, etc., but also to aid and furnish your committee a field in which to investigate, test and draw conclusions." It was also stated that "aside from the standpoint of obtaining a test on these couplers it is economical to use the couplers, as will be seen from a review of the exhibits attached," which exhibits were full detail reports of four couplers — two present type and two experimental type — which your committee has in service on freight tenders and which are all included in this report. The trials should preferably be made on locomotives and need not be delayed for an order for new locomotives, as the couplers can be ordered with any type shank and used to replace couplers on present equipment.

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Your committee would again urge that every member place some of these couplers in service and prepare themselves as well as aid the committee to intelligently adopt a standard M. C. B. coupler at the 1915 convention.

EXHIBIT OF EXPERIMENTAL STANDARD M. C. B. COUPLERS.

(58) Immediately back of convention hall, at the north side of the pier (same location as last year), your committee has on exhibition, for the benefit of the members of the M. C. B. and M. M. Associations, types "A" and "B" Experimental Standard M. C. B. Couplers, embodying both sizes of shank, 5 by 7 in. and 6 by 8 in., both contour lines No. 5 and No. 10, both top and bottom operations and both heights of coupler head, 6¾ in. and 7¼ in. It should be remembered that these couplers were so designed that the same knuckle at least could be used in a passenger-car coupler, thus giving a universal standard knuckle for all equipment. Your committee invites the members of both Associations to visit the exhibit, make such inspection and critical examination of the couplers as they desire and discuss any phase of the situation or service trials as may come to mind. As previously stated, the couplers which were tested in the service-testing machine at Alliance are also included in the exhibit for inspection and discussion.

(59) In conclusion, your committee desires to state that the Association is greatly indebted to the Pennsylvania Railroad for the testing facilities, material and expert assistance furnished to carry out the tests made; and the thanks of the Association are also due the coupler manufacturers for their assistance in the work of your committee during the past year, and especially to the American Steel Foundries and The National Malleable Castings Company for their experimental work and testing facilities.

The Association is indebted to the Railway Supply Manufacturers' Association for the space donated for the exhibition of couplers.

Respectfully submitted,

R. L. KLEINE, Chairman,
G. W. WILDIN,
F. W. BRAZIER,
J. F. DEVOY,
F. H. STARK,
B. JULIEN,
J. W. SMALL,
Committee.

ALTOONA, PA., May 8, 1914.

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APPENDIX.

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SPECIFICATION COUPLERS SUBMITTED BY COUPLER MANUFACTURERS WHICH WERE EXHIBITED AT THE 1914 CONVENTION AND A NUMBER OF EACH SUBJECTED TO THE PULLING TEST.

Number Tested.	Manufacturer. Company	Coupler Designation.	Committee Designation of Coupler.	Contour Line	Length of Head	Knuckle Hub Height	Type of Lock	Location of Lock-Set	Diameter of Pin.	Size of Shank
2	American S.Fds.	Mod. Alliance#3	Te	No.5	10-3/4"	9"	Straight	Guard Arm Wall	1-5/8"	6"x6"
2	"	Pinless or Wedge Lock	Td	"	11-1/2"	9"	Radial Wedge both sides	Front and Rear Walls	None.	6"x6"
2	Buckeye S. C. Co.	No.4	Uc	No.10	10-3/4"	9-1/16"	Straight	C.A.Side-Bottom	1-1/8"	6"x6"
2	Monarch S.C. Co.	Enlarged Lion	Vb	"	10-1/2	10"	"	Guard Arm Wall	1-5/8"	6"x6"
*1	Gould Coupler Co.	"GC"	Wb	"	11"	9"	Wedge on Knu. Side	"	1-1/2"	6"x6"
*1	"	"	Wc	"	11"	9"	Straight	"	1-1/2"	6"x6"
*1	McC. & T. Company	Penn No.3	Xc	"	10-3/4"	9"	"	"	1-5/8"	6"x6"
*1	"	Penn No.4	Xd	No. 5	"	9"	"	"	1-5/8"	6"x6"
2	K. M Castings Co.	Baseley	Ye	No.10	12"	9"	Wedge on C. A. Side.	Rear-Bottom-on Kicker.	1-1/8"	6"x6"
2	" " "	"	Yf	"	12"	9"	Straight	"	1-1/8"	6"x6"

* These Gould Coupler Co. "GC" couplers take same coupler body, the only difference being the angle of locking surface between knuckle and lock.

‡ The only difference between these McConway and Torley Co. couplers Penn. Nos. 3 and 4 is the contour line, the coupler being adaptable to either contour line.

(SEE EXHIBIT NOS. 3 TO 24 INCLUSIVE FOR GRAPHIC CHARTS OF PULLING TEST.)

EXHIBIT NO. 2.

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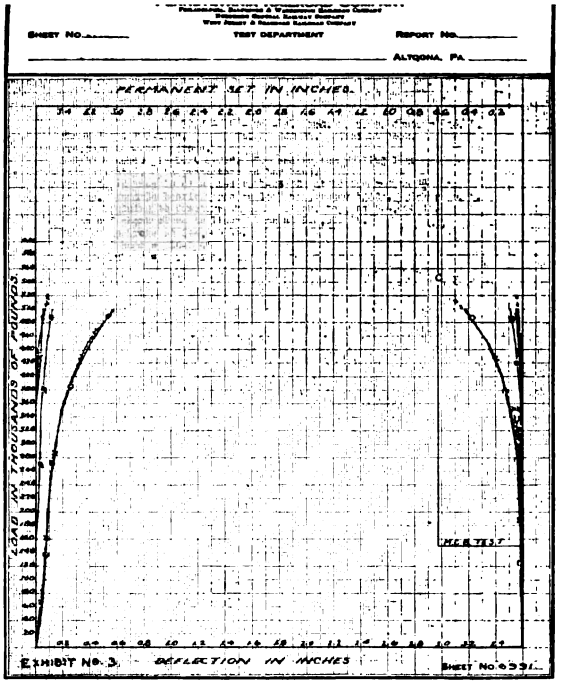
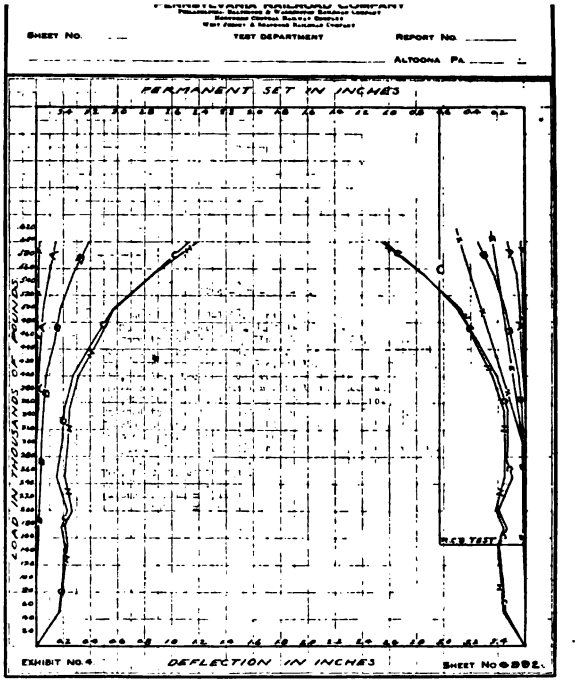


STATIC PULLING TEST.

ALTOONA, PA., 6-7-13.

1703-Pb-Tc-A. Mod. M. C. B. Contour No. 5.

Shank 6x8x9 1/8 in. Weight 480 lb. Straight lock. Fracture somewhat porous. 1 5/8-in. knuckle pin bent 3/32 in. Top and bottom pulling lugs bent slightly. Pin protectors on bar bent. Pin hole in knuckle elongated to 1 33/64 in. at bottom and to 1 3/4 in. at top. Knuckle bearing area on lock compressed 1/32 in. Kicker O. K. Showed beginning to fracture in liner block top at 544,000 lb. Broke off shank close to liner block at 545,000 lb. Yoke strap broke at 544,600 lb. Length of head 10 1/4 in. Knuckle hub 9 in. high.



STATIC PULLING TEST.

ALTOONA, PA., 6-8-13.

1704-Pb-Td-A.

Shank 6x8x9 1/8 in. Weight 517 lb. No knuckle pivot pin in this design. Torn in corner of top liner block at 450,000 lb. Yoke strap broke at 494,000 lb., in pulling to 500,000 lb. Yoke strap broke at 546,700 lb., in pulling to 550,000 lb. Lock worked freely at 500,000 lb. Broke off shank at junction with liner block at 620,000 lb. About 10 per cent blow holes at fracture. Started to tear in throat of knuckle, tear 1 in. long. Started to tear at both pulling lugs of knuckle. Both lugs engaged. Started to tear at pulling lugs in coupler. Pulling lugs in both coupler and knuckle bent. Lock O. K. Kicker O. K. Lifter slightly bent. Mod. M. C. B. coutour No. 5. Radial wedge lock. Length of head 11 1/2 in. Knuckle hub 9 in. high.

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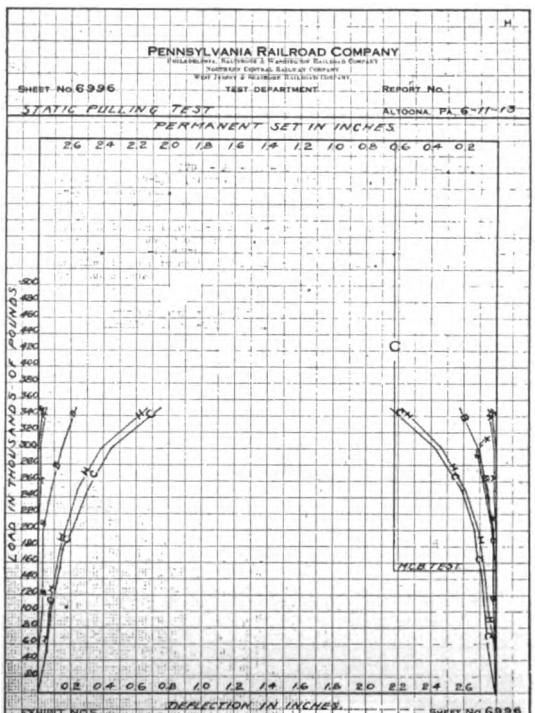
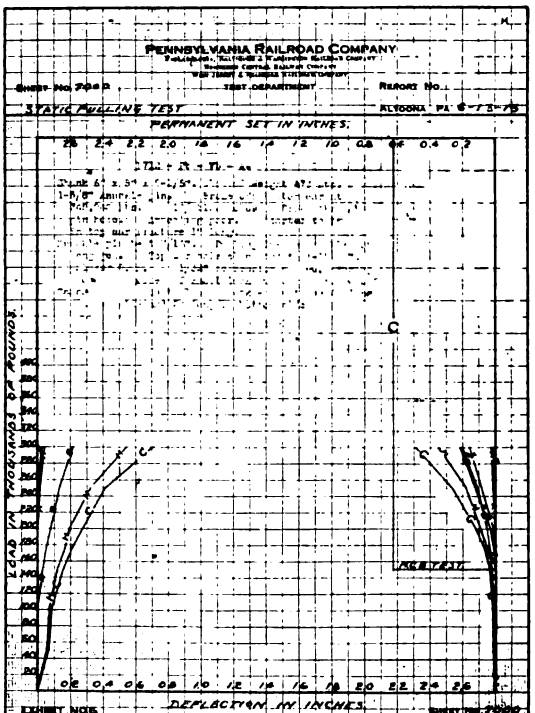


1708-Pb-Uc-A. Straight line contour No. 10.

Shank 6x8x9 1/4 in. (slotted). Weight 448 lb. Straight lock. 1 1/2-in. knuckle pin. Broke in bottom lug back of knuckle pin hole at 388,600 lb. Head partly torn loose from shank—crack extended 7 in. across bottom and 5 in. on the side. Tore lower lug of bar off. The 1 1/2-in. knuckle pin sheared off on top ear. Knuckle pin bent so as to unable dismantling coupler. 40 per cent blow holes. Top ear started to tear through back wall. Length of head 10 3/4 in. Knuckle hub 9 1/4 in. high.



1712-Pb-Vb-A. Straight line contour.

Shank 6x8x9 1/8 in. (slotted). Weight 473 lb. Straight lock. 1 5/8-in. knuckle pin. Broke off bottom ear at 345,940 lb. 10 per cent blow holes. Broke through pin hole. Annealing poor. Started to tear in top ear fracture 1 in. long. Knuckle pin bent 1/8 in. Pulling hook of knuckle not engaged. Top ear hole elongated to 1 1/4 in. Kicker O. K. 1/8-in. depression on knuckle bearing area of lock. Corner of small lock guide rib broken off. Shank cracked close to liner block—fracture 4 in. long on top side and 2 in. long on bottom side. Length of head 10 3/4 in. Knuckle hub 10 in. high.

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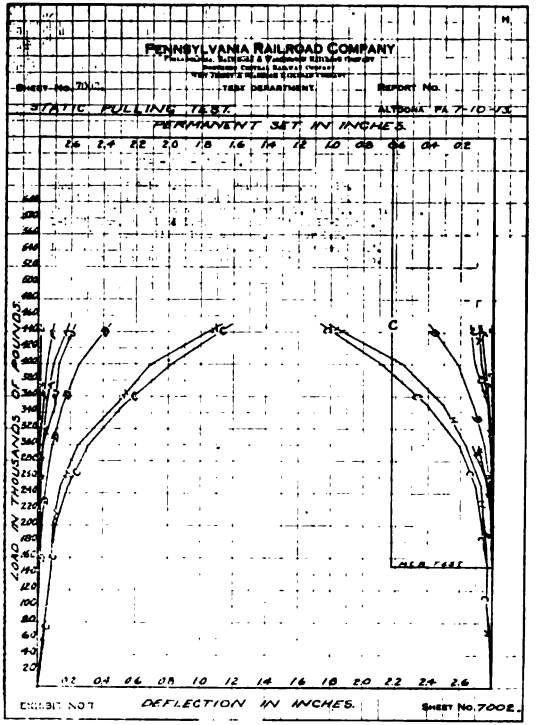
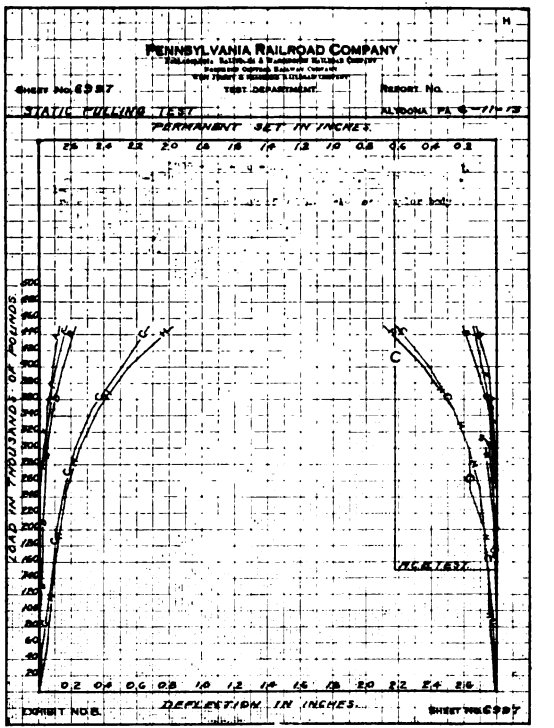


1714-Pb-Wb-A.

Shank 6x8x9 1/8 in. Weight comp. 480 lb. Straight line contour. **Wedge lock on knuckle side.** Failed through pin hole of knuckle at 451,020 lb., metal good. 1 1/2-in. diam. machined pivot pin bent 1/8 in. in 15 1/2-in. L. Top and bottom pulling lugs engaged. Kicker O. K. Lock did not creep during test. Lock compressed 3/4 in. Pin holes in coupler ears elongated 1/8 in. at inner side. Length of head 11 in. Knuckle hub 9 in. high.



1709-Pb-Xc-A. Straight line contour.

Shank 6x8x9 1/8 in. (slotted). Weight 416 lb. Straight lock. 1 1/8-in. knuckle pin. Broke off top and bottom lugs back of pulling ribs on coupler body at 465,130 lb. Started to break in bottom pulling ear. One small blow hole in top pulling ear. Unable to dismantle account knuckle pin being bent. Length of head 10 3/4 in. Knuckle hub 9 in. high.

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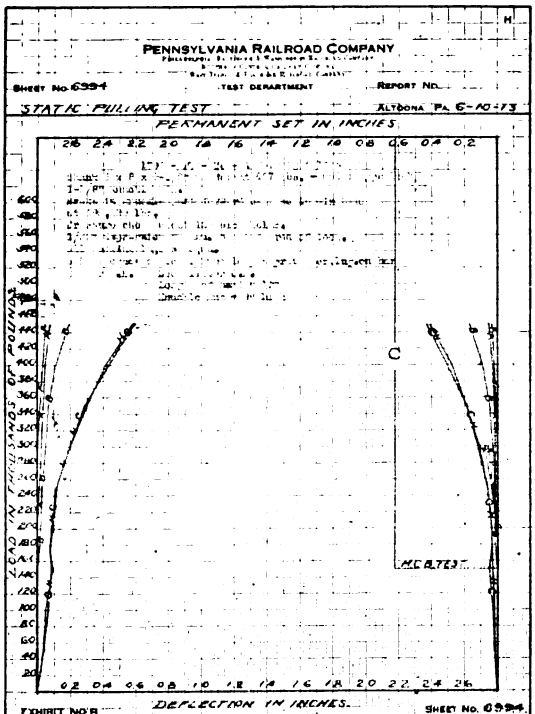
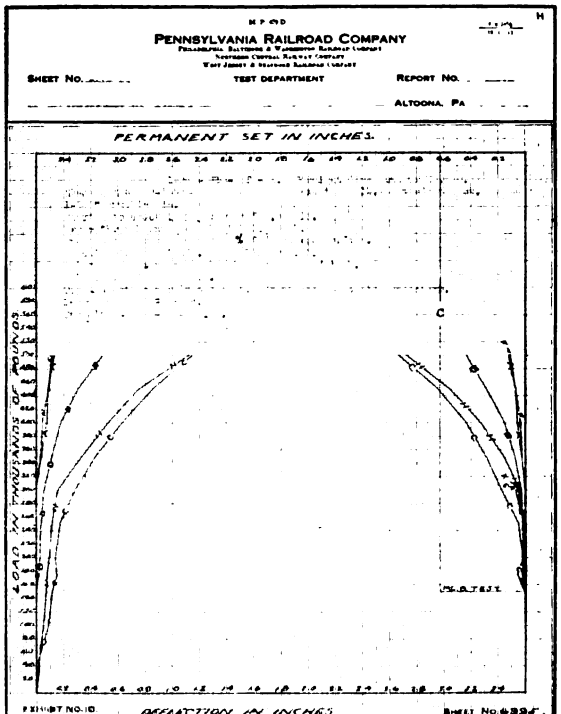


1706-Pb-Yc-A. Straight line contour.

Shank 6x8x9 1/8 in. Weight 467 lb. Wedge type lock. 1 1/8-in. knuckle pin. Broke in knuckle just forward of knuckle pin hole at 495,220 lb. Fracture shows about 12 per cent blow holes. 1/32-in. depression on knuckle bearing area of lock. All pulling lugs engaged. Slight crack on lower knuckle pin protector lug on bar. Kicker O. K. Lock lifter O. K. Length of head 12 in. Knuckle hub 9 in. high.



STATIC PULLING TEST.

ALTOONA, PA., 6-11-13.

1707-Pb-Yf-A. Straight line contour No. 10.

Shank 6x8x9 1/8 in. Weight 448 lb. Straight lock. 1 1/4-in. knuckle pin. Started to crack in top lug at 500,000 lb. Broke through knuckle hub at 531,660 lb. One small blow hole about 2 1/2 per cent. of fractured surface. Knuckle pin bent 1/8 in. Lock lifter O. K. 1/4-in. depression on knuckle bearing area of lock. All pulling lugs engaged. Top and bottom ear lugs slightly fractured about pin protectors. Length of head 12 in. Knuckle hub 9 in. high.

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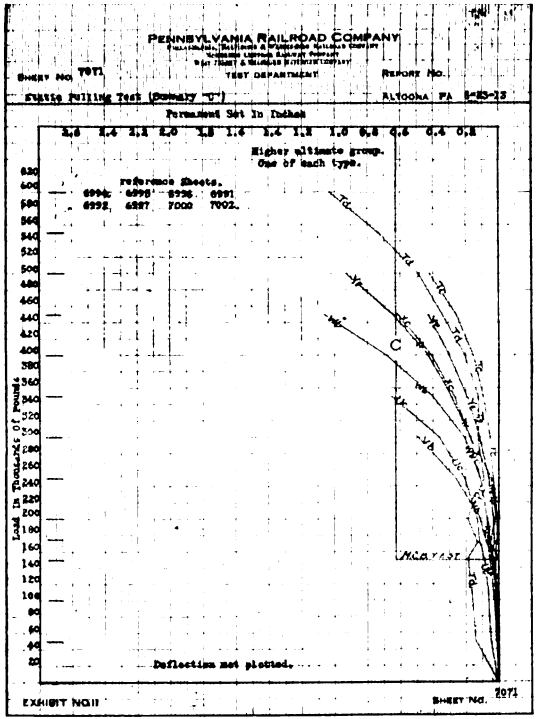


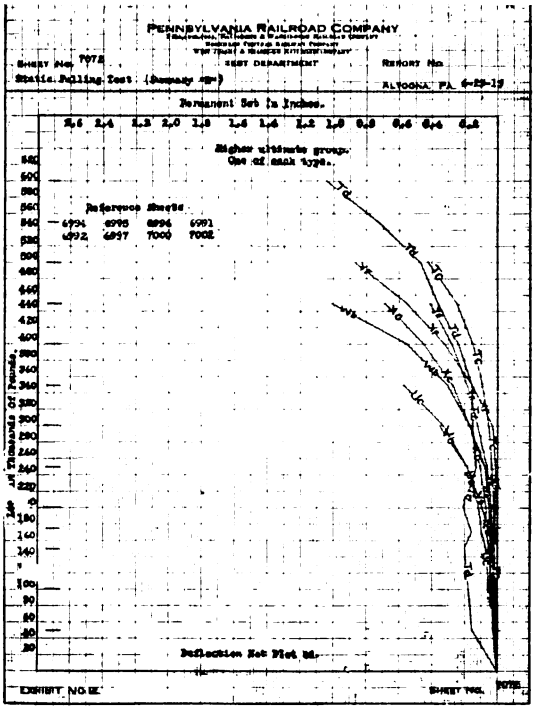
SHEET NO. 7071.
STATIC PULLING TEST (SUMMARY "C").
ALTOONA, PA., 6-23-13.

PERMANENT SET IN INCHES.

2.6 2.4 2.2 2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2

Higher ultimate group. One of each type.
Reference Sheets—6994, 6995, 6996, 6991, 6992, 6997, 7000, 7002.
Deflection not plotted.

0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6



SHEET NO. 7072.
STATIC PULLING TEST (SUMMARY "H").
ALTOONA, PA., 6-23-13.

PERMANENT SET IN INCHES.

2.6 2.4 2.2 2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2

Higher ultimate group. One of each type.
Reference Sheets—6994, 6995, 6996, 6991, 6992, 6997, 7000, 7002.
Deflection not plotted.

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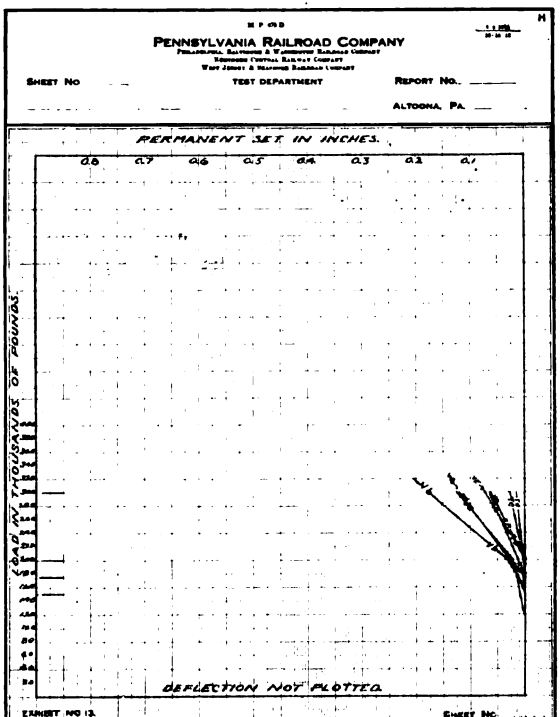


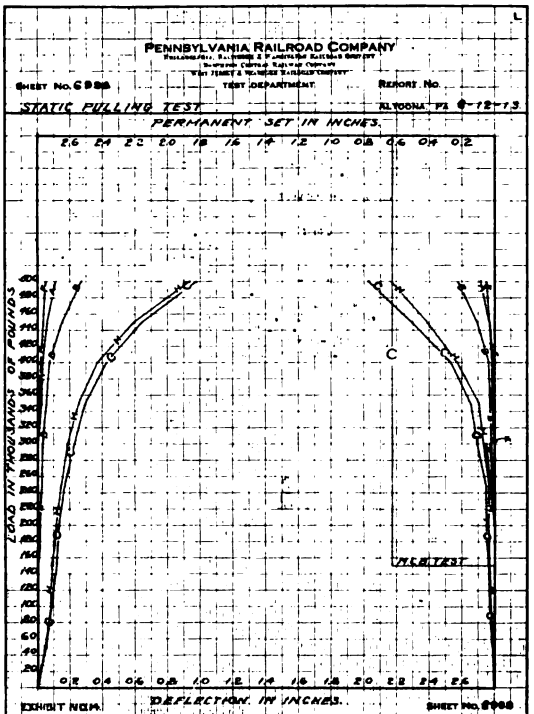
SHEET No. 7073.

STATIC PULLING TEST. (SUMMARY "E").

ALTOONA, PA., 6-24-13.

Higher ultimate group. One of each type.

Reference Sheets—6994, 6995, 6996, 6991, 6992, 6997, 7000, 7002.


PENNSYLVANIA RAILROAD COMPANY
SHEET No. 6988
TEST DEPARTMENT.
REPORT No.
STATIC PULLING TEST
ALTOONA PA 6-12-13
PERMANENT SET IN INCHES.
2.6 2.4 2.2 2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2
LOAD IN THOUSANDS OF POUNDS
FILE TEST
EXHIBIT NO.14.
DEFLECTION IN INCHES.
0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2 2.4 2.6
SHEET No. 6988

1710-Pb-Tc-A. Mod. M. C. B. contour No. 5.

Shank 6x8x9 1/8 in. Weight 468 lb. Straight lock. 1 5/8-in. knuckle pin. Broke through knuckle hub at 531,440 lbs. Material good. Knuckle pin bent 1/16 in. All pulling lugs engaged. 1/8-in. depression on knuckle bearing area of lock. Bottom ear elongated to 1 1/8 in. Top ear elongated to 1 1/8 in. Top and bottom ears slightly fractured about pin protectors—crack 1 in. long. Shank started to break at liner block, top and bottom, cracks 3 in. long. Length of head 10 3/4 in. Knuckle hub 9 in. high.

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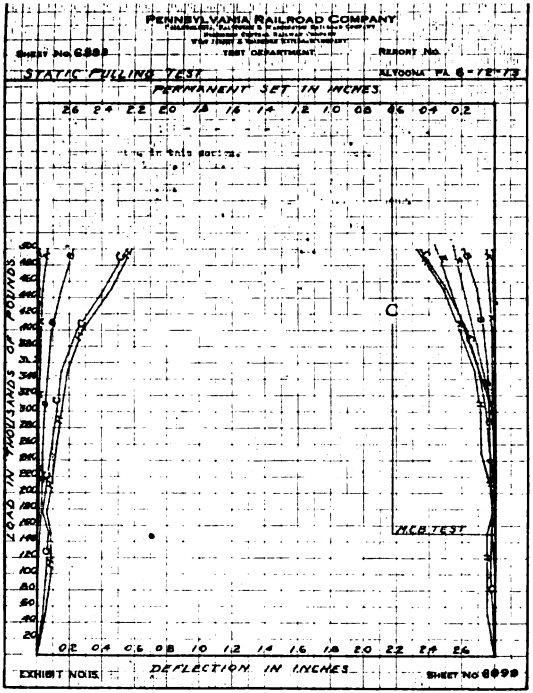
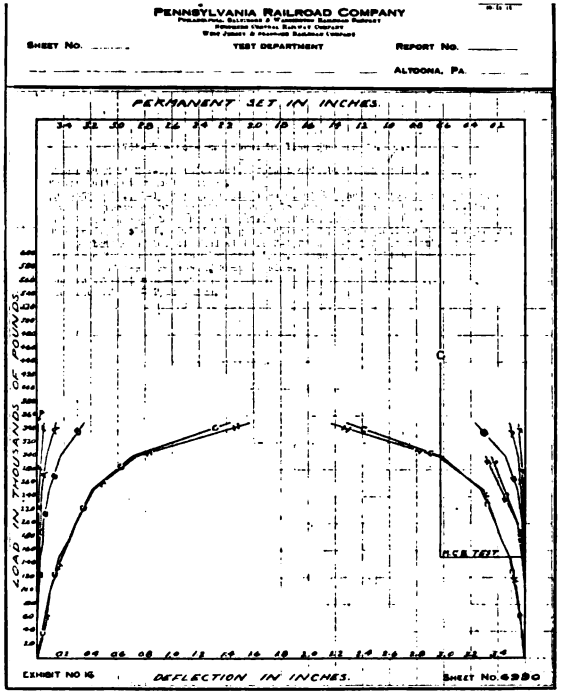


1711-Pb-Td-A. Mod. M. C. B. Contour No. 5.

Shank 6x8x9 1/8 in. Weight 506 lb. No knuckle pin in this design. Radial wedge lock. Torn in shank at 500,000 lb. Broke off in shank 3 in. above liner block at 531,200 lb., about 30 per cent blow holes. Top and bottom ears slightly fractured in throat of contour. Fractures about 1 in. long each. Both top pulling lugs on knuckle slightly fractured. Rear bottom pulling lugs slightly fractured. Lock O. K. Kicker O. K. Length of head 11 1/2 in. Knuckle hub 9 in. high.



STATIC PULLING TEST.

ALTOONA, PA., 6-7-13.

1702-Pb-Uc-A. Straight line contour No. 10.

Shank 6x8x9 1/8 in. (slotted). Weight 449 lb. Straight lock. Tested without knuckle kicker. At 355,720 lb., 1 1/8-in. knuckle pin sheared at top and bottom coupler ears, and coupler fractured at junction of knuckle shank to knuckle hub. Annealing good, metal good except blow hole on outside of tension side of hub. Pin protectors bent. Pulling lug on bottom of knuckle tail bent and pulling lug on bottom of bar cracked at base 3 1/2-in. length by 1/16-in. width. Knuckle pin hole in coupler ears elongated 1/8 in. Lock O. K. Slight crack at junction of head and shank, knuckle side. Length of head 10 3/4 in. Knuckle hub 9/16 in. high.

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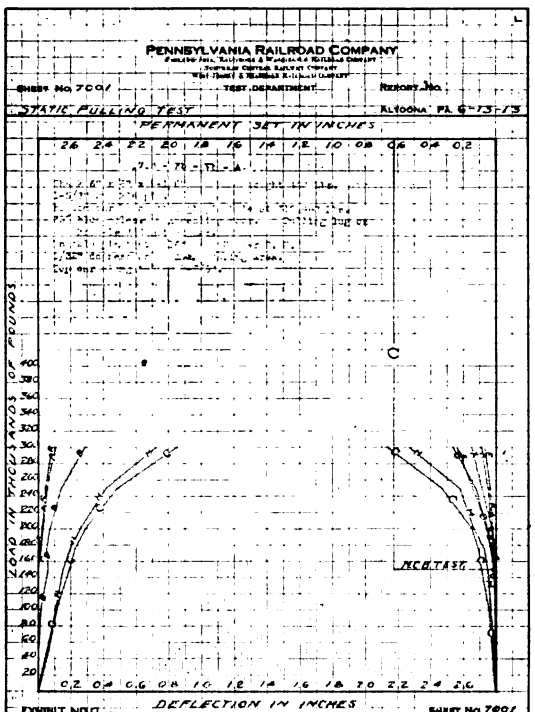
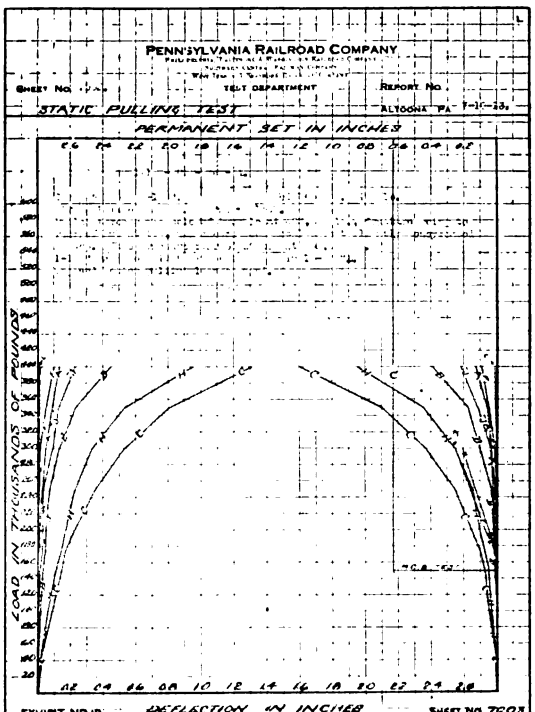


1713-Pb-Vb-A. Straight line contour.

Shank 6x8x9 1/16 in. (slotted). Weight 460 lb. Straight lock. 1 5/16-in. knuckle pin. Bottom ear broke through pin hole at 319,480 lb. 35 per cent blow holes. Annealing poor. Pulling hook of knuckle did not engage. Knuckle pin bent 1/4 in. Kicker O. K. 1/32 in. depression on knuckle bearing area of lock. Top ear elongated to 1 7/8 in. Length of head 10 3/8 in. Knuckle hub 10 in. high.



1715-Pb-Wc-A.

Shank 6x8x9 1/16 in. Weight comp. 483 lb. Straight line contour. Straight lock. Failed through pin hole of knuckle at 423,320 lb., fracture going to rear of hub at top, and showed good metal except slightly honeycombed at top. This fracture started at top at 400,000 lb. 1 1/16 in. machined pivot bent in 15/32-in. L. Top and bottom pulling lugs engaged. Length of head 11 in. Knuckle hub 9 in. high.

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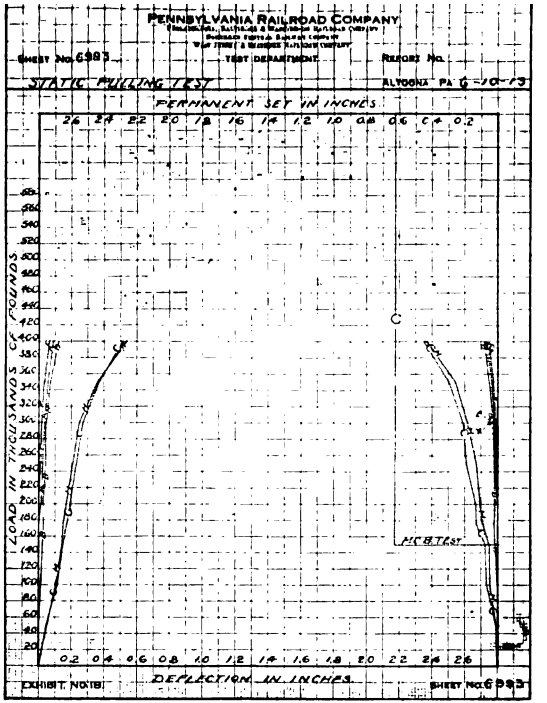
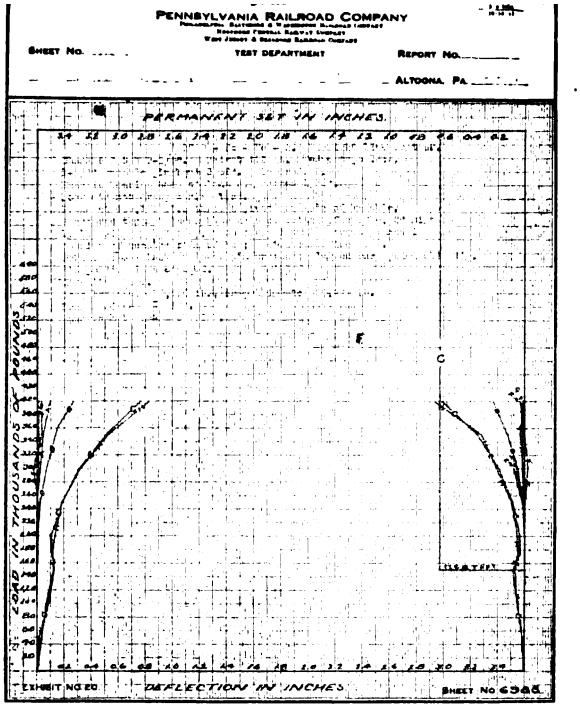


1705-Pb-Xd-A. Mod. M. C. B. Contour No. 5.

Shank 6x8x9 1/8 in. Weight 425 lb. Straight lock. 1 5/8-in. knuckle pin. Knuckle broke in hub-tension side at 449,800 lb. Fracture shows 10 per cent blow holes. Knuckle had to be forced open to obtain reading, account large lump on knuckle. Knuckle pin bent 1/4 in. 3/32-in. depression on lock bearing area. 1-in. fracture of bottom ear near knuckle pin protector. Top ear elongated to 1 13/16 in. Bottom ear elongated to 1 3/4 in. Small cracks on coupler body just back of top and bottom pulling lug. Length of head 10 3/4 in. Knuckle hub 9 in. high.



STATIC PULLING TEST.

ALTOONA, PA., 6-6-13.

1700-Pb-Ye-A. Straight line contour.

Shank 6x8x9 1/8 in. Weight 473 lb. Wedge type lock. 1 1/8-in. knuckle pin bent 3/8 in. Kicker O. K. Knuckle bearing area of lock compressed 3/32 in. Lock did not creep during test. Broke at 460,130 lb., through pivot pin hole of knuckle. Fractured through large blow hole at bottom of knuckle, 2 in. high by 1 1/2 in. wide by 1 1/2 in. deep, also several small porous places into outside of tension side of hub; metal otherwise good. Porous places back of lower pin protector lug on bar opened slightly. All pulling lugs engaged. Annealing good. Grip broke at 272,400 lb., in pulling to 300,000 lb. Length of head 12 in Knuckle hub 9 in. high.

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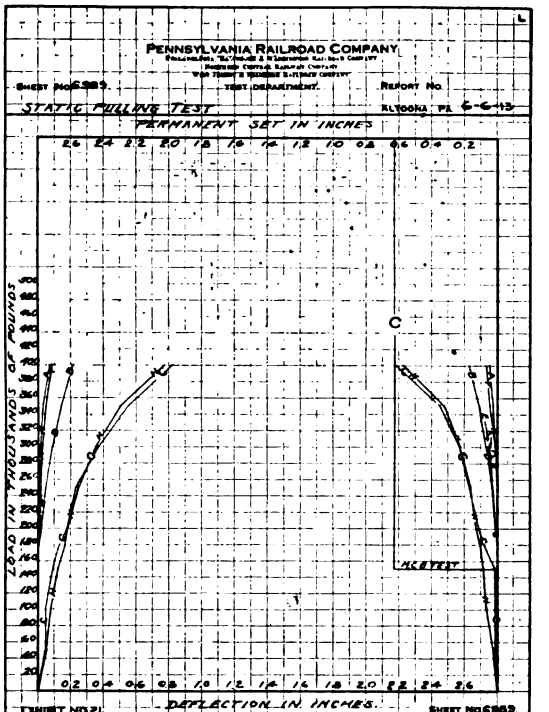
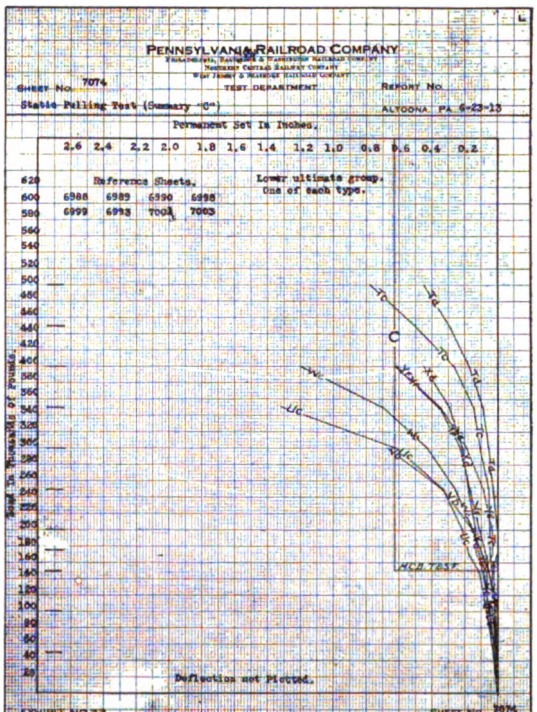


1701-Pb-Yf-A. Straight line contour No. 10.

Shank 6x8x9⅛ in. Weight 453 lb. Straight lock. 1⅛-in. knuckle pin bent ⅛ in. Kicker O. K. Knuckle bearing area of lock compressed ⅛ in. Broke at 437,440 lb. through both top and bottom ear about 1½ in. back of knuckle pin protector, cracks extending about 4 in. long. Fracture shows not properly annealed. Yoke strap broke at 370,000 lbs. in pulling to 400,000 lb. Yoke strap broke at 427,820 lb. in pulling to 450,000 lb. Yoke strap broke at 426,000 lb. in pulling to 450,000 lb. Length of head 12 in. Knuckle hub 9 in. high.



SHEET NO. 7074.
STATIC PULLING TEST (SUMMARY "C").
ALTOONA, PA., 6-23-13.
PERMANENT SET IN INCHES.

2.6 2.4 2.2 2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2

Lower ultimate group. One of each style.

Reference Sheets—6988, 6989, 6990, 6998, 6999, 6993, 7001, 7003.
Deflection not plotted.

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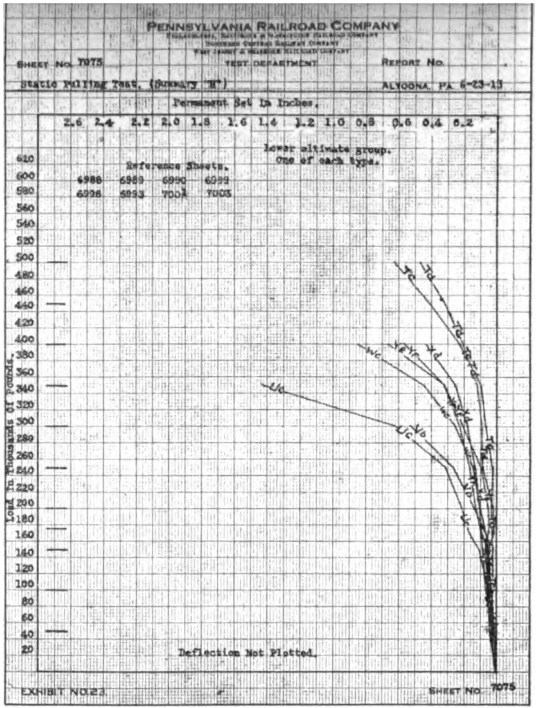
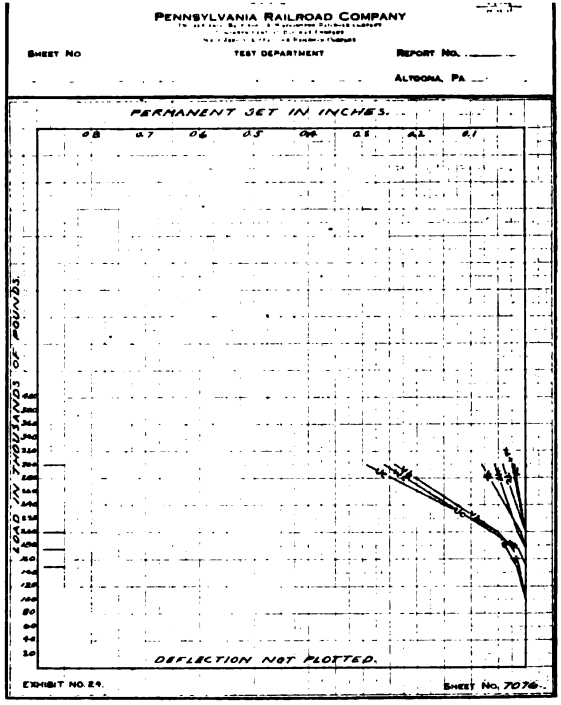


SHEET NO. 7075.
STATIC PULLING TEST (SUMMARY "H").
ALTOONA, PA., 6-23-13.

PERMANENT SET IN INCHES.

2.6 2.4 2.2 2.0 1.8 1.6 1.4 1.2 1.0 0.8 0.6 0.4 0.2

Lower ultimate group. One of each type.
Reference Sheets—6988, 6989, 6990, 6998, 6999, 6993, 7001, 7003.
Deflection not plotted.



STATIC PULLING TEST (SUMMARY "E").
ALTOONA, PA., 6-24-13.

Lower ultimate group. One of each type.
Reference Sheets—6988, 6989, 6990, 6998, 6999, 6993, 7001, 7003.

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THE PRESIDENT: Gentlemen, the report is before you for discussion. The work of the committee has been so thorough and so well presented in their report that it probably leaves very little to discuss. Some of you may wish to ask the committee some questions as to their work, and particularly as to the expected developments and future program. Mr. Kleine will undoubtedly be glad to answer any questions.

MR. FULLER: Mr. President, I have very little to say about the report of the committee, but I feel that a report of this character should not be passed unnoticed. I think the Association is greatly indebted to the committee and to the manufacturers for the work they have done; it is a magnificent report, and while I have been delinquent in my part of it, I feel that the members of this Association should order these couplers without any further delay, try them out, and help this committee along. The subject is of too much importance to go by default.

MR. GAINES: Mr. President, I am very glad to concur in what Mr. Fuller says. I think this is one of the most important subjects we have up. Of course the committee work has been so thorough that there is very little, naturally, to discuss in the paper prepared. On the other hand, there is one thing I am interested in, and I call your attention to their report, paragraph 55, in which they have not been able to do anything on the draft gear proposition. I believe that is another very valuable and important thing, and I would like to suggest to the incoming Executive Committee, if they could split that thing, to do so. I think the coupler committee have all they can do to tend to the coupler business; there is a lot of work for them to do. If we could have a committee on draft gear and get some definite data on that, I think it would be an excellent thing.

THE PRESIDENT: I think that is a very good suggestion, Mr. Gaines, and the new Executive Committee will undoubtedly be glad to consider it when preparing the work of the committees for the ensuing year. I wish to call the especial attention of the members to the exhibits of the experimental couplers near the hall on the pier, and also in the locomotives on Georgia avenue. This is a very important question, and the opportunity to see the

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development of the standard M. C. B. coupler in this exhibit is much better than you can have anywhere else.

MR. MACBAIN: I just wish to propose that at this meeting we extend the thanks of the Association to the Pennsylvania Railroad for the valuable assistance that was rendered in every possible way in carrying on this test, and also to the manufacturers for the assistance they gave us.

MR. ROBERT QUAYLE (C. & N. W. Ry.): In seconding that motion, Mr. Chairman, I wish to call attention to the fact that we are peculiarly fortunate in having such a good committee that has done such good work, and has devoted so much time and intelligence to it. The document which they have submitted is more of a text-book than a report, and I am sure our members will all be glad, at the earliest possible moment, and for a good many moments, to delve into and see what has been done. I therefore take pleasure in seconding that motion.

MR. BRAZIER: It is rather embarrassing for me to say anything, as I am on this committee, but my principle in life is to give the man credit who does the work; and I want to say that we can not, in any motion that you make here, thank Mr. Kleine or the Pennsylvania Railroad enough for the work they have done. We have tried in our way, and the others on the committee, to do our part, but Mr. Kleine has given two-thirds of his time, I feel quite sure, during the past year on this work.

There is another thing — this is the place we ought to go on record so that our officials can understand that the improvement with these couplers on account of their increased weight, etc., will cost more than inferior ones. We have been criticized somewhat, because we have designed larger couplers, but the service demands them. We are getting larger locomotives, heavier cars, and we must have couplers with which to pull these heavier trains safely. The only way we can get more information and data is to ask the permission of our officials to order some of these couplers for testing. We realize they are going to cost more money, as any good thing costs more than a poor one. We believe the work the committee has done in bringing up these improved couplers to the present state will mean a saving of money in the end.

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As I have said, it is embarrassing for me to say anything particularly about this report, being a member of the committee. I, as well as others, do not desire to take the glory in the work which the committee has done, but believe Mr. Kleine, our chairman, and Mr. Wallis of the Pennsylvania Railroad, deserve the thanks of this Association for the good work they have done, both in the tests made and the preparation of this report.

MR. MACBAIN: With the consent of the seconder of my previous motion, I wish to suggest that the Association put its stamp of approval on the work of this committee, and the thanks of the Association to Mr. Kleine and the other members of the committee for the service that has been rendered.

THE PRESIDENT: That addition to your motion will be acceptable to Mr. Quayle.

MR. F. H. STARK (Montour R. R.): I believe Mr. Kleine will be willing to share a little of that glory and include the names of Mr. Young and Mr. Boring, as they are the three men who have done the work.

MR. KLEINE: I would rather see the coupler put in use on the equipment than to have so many bouquets handed out. [Applause.]

THE PRESIDENT: I think that is a practical suggestion. I hope that will be done. Is there any further discussion on the motion? All in favor of the motion say "aye"; opposed, "no." Carried.

The report is still before you for discussion, if there is anything further to be offered.

MR. PRATT: I would like to ask the committee if they have any special form of report which they would desire the railroads to make in the testing of the couplers, and if so, if they have not done so, would it not be well to furnish such a blank?

MR. KLEINE: The committee calls attention in Circular No. 16 as to just how these reports should be made and what information should be given; in other words, Exhibit No. 1 shows a sketch as to how the coupler should be laid off, and it will be necessary for each road to keep a log of a few of these couplers. While the tests are going on, the committee would like

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to visit the different roads, at least some of them, and see which railroads are having trouble with the couplers, if any trouble should develop. We, of course, expect some trouble will develop. If the tests are conducted along the lines suggested in Circular No. 16, and a number of couplers laid off in accordance with Exhibit No. 1, and a record kept, it will give both the railroad and the committee all the information they desire.

MR. CLARK: I move that the report of the committee be accepted and the committee continued, and in making that motion I want to say that I regret very much that we have not been able to help the committee by putting some of the experimental couplers in service. We intend to do so, as we are very much interested in the matter, and shall do so as soon as possible. We are very much interested in the committee's report as to what they have done. They have made greater progress for the standardization of couplers than I ever expected they could do. I had thought the situation was such that it was almost hopeless to expect we would ever have a standard coupler. But it looks very encouraging now. I think the committee is entitled to a great deal of credit for having brought the thing to its present state.

MR. MACBAIN: I second Mr. Clark's motion, and at the same time wish to make the statement that we also have been delinquent in the matter of testing the couplers, but we will take the matter up as soon as we get back, and put on some.

THE PRESIDENT: You have heard Mr. Clark's motion and Mr. MacBain's second of it in regard to accepting the report and continuing the committee. Is there any discussion? All in favor say "aye"; opposed, "no." The motion is carried. If there is no further discussion of this report, we will take up the next report, which is that of the Committee on Safety Appliances, of which I am chairman. I will ask the vice-president to take the chair.

(Vice-President Crawford in the chair.)

CHAIRMAN CRAWFORD: The report of the Committee on Safety Appliances, Mr. M. K. Barnum, chairman, will now be presented.

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REPORT OF THE COMMITTEE ON SAFETY APPLIANCES.

MR. M. K. BARNUM: Mr. Chairman and gentlemen, the Standing Committee on Safety Appliances sent out its circular asking for certain information and have received some replies, but they were hardly complete enough to justify a written report. However, the conclusion which the committee arrived at as the result partly of the replies which were received to the circular, and partly from the failures to reply, was that there is need of more activity on the part of most of the railroads in pushing the work of applying safety appliances. It has also developed in the meetings of this committee and those of the Executive Committee, that there is not a sufficiently clear understanding on the part of the employees of many of the roads as to just how the safety appliances should be put on to comply with the law.

The only way in which that lack of understanding can be corrected is by studying the law and by inaugurating a systematic campaign of education with the men who have to do with safety appliances.

I wish, as chairman of this committee, to make the chief point in the report of the committee, that is, that an organized effort be made to instruct the carmen, including foremen, inspectors and all who have anything to do with safety appliances, in their proper application so that they will have very clearly in mind just what the law requires and when a car is once equipped with safety appliances it will be in conformity with the law and will not go out with mistakes in application which constitute a violation when the car leaves the shop.

CHAIRMAN CRAWFORD: A motion to accept and approve the report of the Committee on Safety Appliances is in order.

MR. MACBAIN: I would move that the report of the committee be accepted and approved.

MR. GAINES: I would emphasize what Mr. Barnum said about the necessity of going after the shopmen and see that they thoroughly understand the law relating to safety appliances. I very recently found that we were letting one class of cars go out of the shop with handholds two inches shorter than the law

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required, and no one discovered that, until we had turned out quite a large number of the cars, when someone measured the thing up and found there was an error. That is one illustration of a large number of things in the way of mistakes which may occur unless this matter is given very close attention.

MR. GOODNOW: In connection with Mr. Barnum's remarks with respect to shop work in putting freight cars up to the safety appliance standards and having same correct in details, it just occurs to me now that the trouble which is going to be experienced upon the law becoming effective in 1916 is in the interchange of freight cars on account of the difference of opinion as between the inspectors of railroads as to the interpretation of the safety appliance standards, and I would like to suggest to the committee for their consideration the advisability of having a corps of inspectors to cover certain districts, say on about the same plan as the federal inspectors. These inspectors to be paid by this Association or through some other means, and to act in instructing and educating foremen and inspectors at interchange points so as to prevent misunderstandings and avoid delay to cars. I believe the railroads can well afford this, as I feel that in the handling of cars between railroads there is bound to be differences of opinion as to what will pass or not according to the safety appliance law, and a man competent to instruct those actually handling the work as well as conferring with the heads of railroads would go a long way in keeping matters straight.

MR. HENNESSEY: Mr. President, as Mr. Goodnow said, it is not alone the difference of opinion between the railroad men as to the manner of equipping the cars with safety devices, but there is a difference of opinion between the Government inspectors, and I believe it would be advisable for this Association to get out a set of cuts that are really plainer than anything that has been gotten out thus far and send it to every railroad in the country.

MR. BRAZIER: I would like to follow up what Mr. Hennessey says. We have found it very important on our own system to educate our men. We can not take seven or eight shops and get seven or eight foremen to read blue-prints alike. Repairmen,

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especially on piecework, will put on a grab handle as best they can, and get by, if they can, with it.

I want to say, gentlemen, this is a very important subject and one we are right up against. I am free to tell you in an inspection made recently in the Niagara Frontier, I would be almost ashamed to tell you of the cars that had penalty defects, or which will be penalty defects on and after July 1, 1916, and you may as well wake up to-day as to wait until July 1, 1916. Many are not putting on safety appliances right, and are not maintaining them right. A car gets in an accident, repairs are made, they are not standard to the car, not standard to the law and not standard to anything, because originally they were not correct. I am free to tell you over twenty per cent of the cars interchanged, we found defective, which would be penalty defects, or would be if we run those cars after July 1, 1916.

You might as well take your medicine now, and educate your men to do the work right. On the Central, we are getting up a book, as Mr. Hennessey suggests, and we are going to have the cuts and law in it. In addition to that we have men who are going around all over the System trying to educate our own men. What I am telling you is something you know, and something your higher officials should have their attention called to. You must do your work right. Instead of having less in our economy times, we need better inspection. [Applause.]

MR. THOMSON (P. & R.): Right along the lines in which Mr. Hennessey has spoken, I would like to call attention to the fact that we must have the Government inspectors right, too. It is not all the fault of the railroads. Just yesterday, or the day before, an interpretation was brought to our attention in regard to the step on caboose cars. What is a box step on a caboose car, according to the latest ruling? Also, the point was brought up as to what ought to be the clearance on a caboose car grab-handle, whether the fastening leg at the middle of the handle should dip down and clear, so that the hand would slide around. Are these points a new interpretation of the law? The straight fastening leg on the handle may serve a good purpose in stopping a man's grip instead of letting it slide around. One inspector will say one thing and another will say another. The Government

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inspectors have to get right first. Our cars are going through the shops where we have been applying safety appliances right along, but we can not have it right in 1916 if we are constantly meeting new interpretations. So I think these various interpretations of this law ought to be made very clear.

MR. FULLER: Our Association is much like doctors and lawyers who have a reputation for disagreeing at times. Our Association oftentimes is a divided body and not harmonious in its opinion. I believe if our members will consider the requirements of the law in its entirety and study the cuts they will not have very much trouble. The difficulty is that too many technical questions are constantly being raised. When we received the law, we took one of each class of cars on our railroad, and equipped it as we understood the requirements. We took half a dozen good bright carmen as a committee to study this question, and after these cars were equipped each one made an inspection and a report as to the correctness, in his opinion, of the applications. After this was done the entire committee, with our designing department, went over the proposition to determine the intention of the law. We made some mistakes, it is true, but I do not believe there is anything about the requirements of the law so intricate or so deep that it can not be understood. There is no excuse for anyone applying a grabiron two inches shorter than the requirements, and I think if we would all take hold of this proposition and give it our personal attention and have the men that are educated go to different points and educate the men doing the work and check the work they are doing, there will be little trouble. I speak from experience, and while we have made some mistakes, as stated above, we have not made very many. Most of these mistakes I made myself, and I was on the committee that conferred with the Government representatives, and I thought I knew the requirements pretty clearly. Such mistakes as I have made I have found due to considering that one particular rule covered some certain phase of the requirements instead of considering the rules as a whole, and I think if we will do this and discontinue raising technical questions there will not be much trouble getting the cars equipped.

MR. TATUM: Mr. President, I have heard this discussion

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with great interest, and I want to say I concur in the statement made by Mr. Barnum. What the railroads want to do is to get busy and do what they have to do. The law is very clear. There may be an opportunity for difference of opinion, but I find that the work remaining to be done is to be done by the railroads, that is, to get the cars equipped. We do not find that the Interstate Commerce Inspectors differ so widely. We find they are a pretty good set of fellows; they are about right, and if the railroads get as near right as they are, there won't be any trouble when the time expires for the equipment to be equipped with safety appliances. What we need is supervision. We want to follow the law. As has been said, it is not so intricate but what it can be understood. I think it is very clear. Let us get busy and have the work done in time, and we will not have to pray to the Government inspectors for mercy, as maybe we will have to pray to God to have mercy on us for our sins.

MR. QUAYLE: We recently had a sample car built and brought to the shops for inspection before the other cars were to be set up, and during one day we had seven railroad men from foreign lines look over that car. Every man, every one of the seven, first said that the safety appliances did not comply with the law. After a little discussion of the matter four of them agreed that it did, and the other three still stick to it that it does not. Now that is evidence to me that we are going to have more trouble, by far, in the interchange of cars among ourselves than we are going to have with the Government officials, and if we can not agree among ourselves, how can we expect the inspectors to agree with us? Therefore, it is necessary that we have a complete and thorough understanding.

Now, for example, we have just one little rule there that says, when your handhold is put on the face of the end sill, it says "on the face of the end sill, or sheathing over the end sill." Now two men construed that to mean that "over the sheathing" was above the sheathing. [Laughter.] Of course, it is "over." When it is up here [indicating] it is different, and that had to be above the sheathing. Now when we get such erroneous ideas as that, we are going to get into trouble. I agree with someone who spoke a few minutes ago, and in which he said that in these

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charts we have that shown very clearly, and it does show it clearly, and in no place in the specifications is there a handhold shown above the sill, but all on the face of the sill, and yet, in the face of that, three men, high up in the mechanical departments of railways of this country, say that is dead wrong. Now we are going to have trouble with that, and it seems to me that the Executive Committee of this Association ought to at least begin to consider the matter in such a way that they can give to us poor fellows that don't know very much about it such information as will set us right before July 1, 1916, and not allow us to spend all the company's money and then find we have spent it in a wrong manner, and the results that we obtain are not in accord with your views, and some other gentlemen's views, particularly the Interstate Commerce Commission. [Applause.]

MR. MACBAIN: Mr. Chairman and gentlemen, I do not think the situation is quite as bad as it might be considered. We have found a few cases, in a recent investigation made, where we were not in exact accordance with the law, but in most of those cases we found it was where repairs had been made and small errors had been made in putting on a straight grabiron where a drop grabiron had been used, either on the end sill or on the roof of the car. Now as regards the first application of safety appliances, we have had some little discussion on that, too. We have equipped some cars that were not in exact accordance with the law, but we have kept in touch with the Interstate Commerce Commission inspectors, and even have gone so far as to take the matter up with Mr. Belknap, and so far we have been able to iron out our difficulties. We never have had a case yet that we have not been able to settle in a very satisfactory way with the Government inspectors. Now, I think the real necessity of the case is to have some person in each one of our organizations who can tell the correct methods at a glance, without taking a rule and going over the car; such a man could take the print in his hand and go around and check up a car at the different yards occasionally, and in that way I think we could accomplish a great deal more than by any campaign of getting together with the Government inspectors, because there will be some dissension and some differences of opinion expressed at any meeting that

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might be had, just the same as the differences of opinion that you will find in this meeting here this morning.

The wrong repair proposition, you will discover upon investigation, is the biggest part of the trouble, but I am not looking for any serious consequences from that. I realize that the Government fully comprehends the enormity of the whole task, and I believe that as long as we all display a disposition to comply with the law and get the safety appliances attached, should any little errors exist at the time a job is completed, we will be met in a spirit of fairness and given time to correct any minor defects that exist.

CHAIRMAN CRAWFORD: Gentlemen, is there any further discussion of this paper?

MR. PRATT: Mr. President, one of the members has stated that they were getting out a booklet showing the application of safety appliances. As I remember it, at the Executive Committee meeting in New York last fall, this committee, or some one, was to look up the matter for the Association of printing a pamphlet of that character. Was that mentioned in any way in the report?

CHAIRMAN CRAWFORD: I will ask the chairman to state as to that.

MR. BARNUM: That is correct. There was such a resolution, and the committee has been working on that proposition, and has obtained several sample forms to consider in getting up such a book, and I think the matter is in shape so that it can be followed up, and an M. C. B. book of safety appliances can be sent out in the near future.

MR. E. T. MILLAR (B. & M. R. R.): Mr. President, I would just like to ask one question. Is the committee, in getting out this pamphlet, considering putting into the back of it the numbers conforming to those used by the Interstate inspectors for defects? If that was embodied in that book, it would be quite an assistance to the yard inspectors, as the Interstate inspectors take defects by numbers in place of writing them out, and the car inspector could do the same thing, and then refer to that number as to what it meant. It is much easier to take a few numbers than it is to write the whole description out.

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MR. BARNUM: Mr. Millar, I think that is the intention, and in any event your suggestion will be taken into consideration, before the work is completed.

CHAIRMAN CRAWFORD: If there is no further discussion, the question will come up before you of accepting and approving the report.

MR. GAINES: I move that we approve and accept this report of the committee.

Motion seconded.

CHAIRMAN CRAWFORD: As many as favor that motion, signify by saying "aye"; opposed, "no." Carried.

(M. K. Barnum in the chair.)

THE PRESIDENT: The next report on the program is that of Rules for Loading Materials. Mr. Kearney will present that report.

Mr. Kearney presented the report, as follows:

REPORT OF STANDING COMMITTEE ON M. C. B. LOADING RULES.

To the Members:

On account of a number of further suggestions and changes offered in connection with the 1912 code of Loading Rules after your committee's report for last year had been printed, as alluded to when same was presented to the Association, this opportunity is taken to indicate the corrections and insertions it was found necessary to make in their final printing on account of errors made in the preparation of the letter ballot as submitted. Your committee took upon itself the necessary correcting of the rules since the requirements involved were largely of a minor character, and the changes only made them harmonize with what was intended, and with approved and accepted practices.

The last sentence of Rule 15-E, as appearing in the 1913 printed code, was presented in the committee's supplementary report, but through error was not included in the letter ballot. As the provision of the clause does not seem to be exactly what is desirable, your committee recommends that it be withdrawn pending further investigation.

RULE 7.—A change was made in reference to the height of sides of gondola cars from 30 to 36 in., after submission to letter ballot, in order to conform with the Interstate Commerce Commission references.

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Changes in the following rules and cuts were submitted in the committee's supplementary report, and have been incorporated in the 1913 code, although they were not included in the letter ballot.

Rules 12, 22, 24, 76, 78, 81-B, 93, 94, 117-A, 121-B, 134.

Figs. 12, 29, 33-A, 43, 46, 59.

The withdrawal of Rule 27-A, and changes made in Rules 51 and 91, were recommended in your committee's last report, but through some error appeared in the letter ballot. Your committee left them out of the 1913 code in the final printing, pending further investigation.

Your committee asks approval of its act.

The following recommendations were made in your committee's last report and were submitted to letter ballot, but were overlooked in the printing of the code. They will be included in the next issue of the rules.

Corrections should have been made in the heading of Rule 35, page 25.

Rule 122-A should have been made to conform to cuts 66 B and C.

The following errors were made in printing:

Rule 74.— Reference to Fig. 29, line 11, should not have been omitted.

Rule 101 should have appeared as a paragraph of Rule 100.

Rules 15 A, B and C.— The words "or sliding" should appear in parentheses reading "(with or without sliding pieces)" after the words "per car."

RECOMMENDED CHANGES.

Page 3, heading.— Omit the words "On open cars."

Explanation: The general instructions cover specifications for closed as well as open cars, therefore "On open cars" should be omitted from the heading. The various subheadings throughout the book cover open or closed cars, as the case may be.

This would make the heading read: "Rules for Loading Materials."

Reference to height of dividing line between high and low side gondola cars should be shown as 36 in. instead of 30 in. throughout the code when reprinted.

RULE 8.— Add a new sentence as follows: "The lading must be so placed on the car that there will not be more weight on one side of the car than on the other."

Explanation: There have been a number of derailments resulting from unequal distribution of the lading on cars.

This would make the rule read as follows:

"No truck of any car will be allowed to carry more load than one-half of the marked capacity of the car, plus 10 per cent for overload. In case of doubt, this must be verified by weighing. The lading must be so

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placed on the car that there will not be more weight on one side of the car than on the other."

RULE 12, seventh line.— Change "Rule 32, Fig. 4" to read "Rules 32, 33 and 34, Figs. 4 and 4-a."

Explanation: Rules 32 and 34, as well as Figs. 4 and 4-a, cover the use of hemlock stakes for single loads of sawed lumber and, therefore, the reference to these rules in Rule 12 should be corrected accordingly.

This would make the rule read as follows:

"All stakes, clamping-pieces, bearing-pieces and braces must be sound, straight-grained lumber (hardwood preferred) and free from knots that would materially impair their strength, or rolled or built-up steel sections of equal strength. Hemlock may be used only for single loads of sawed lumber, as provided for in Rules 32, 33 and 34. Figs. 4 and 4-a, and for loading of tan bark, Rule 60, and loading of slab wood, Rule 66, and for chocking and blocking for any loads. Care must be taken to keep the stakes from spreading at the top while the cars are being loaded, and in no case must the load exceed the width of the car. Unless otherwise specified, stakes for flat and gondola cars with sides less than thirty (30) in. high should be four (4) in. wide by five (5) in. deep, or saplings five (5) in. in diameter at center. For gondola cars with sides thirty (30) in. high or over, stakes must be four (4) in. wide by four (4) in. deep, or saplings four (4) in. in diameter at center, tapered at the end to fit, extend through and completely fill the stake pockets."

RULE 15.— Add the following to the end of the first paragraph:

"Wooden flat cars having but two truss rods must not be used for twin or triple loads."

Explanation: These cars are old, in a generally worn-out condition, and of insufficient strength to sustain concentrated loads under present service conditions.

This would make the rule read as follows:

The weight of lading carried on any car must be governed not only by the marked capacity of the car, but also by its general construction, as well as by the number and location of the bearing-pieces upon which the load rests. Wooden flat cars having but two truss rods must not be used for twin or triple loads.

"To prevent overloading, the following regulations must be adhered to. Where reference is made to the capacity of a car, it implies the marked capacity plus 10 per cent."

RULE 15-A.— Omit reference to flat cars with two truss rods.

Explanation: For reasons given under Rule 15.

Add to the end of rule "On steel flat and steel drop-end gondola cars constructed with fish-belly girders, the weight of lading must not exceed three-quarters (¾) of the capacity of car."

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Explanation: Cars of this type are especially designed to carry concentrated loads.

This would make the rule read as follows:

"For loads carried on one bearing-piece per car (with or without sliding pieces (located near the center of car: On flat cars having more than two truss rods, and on low-sided gondola cars, the weight of the lading must not exceed two-thirds of the capacity of car. On steel flat and steel drop-end gondola cars contructed with fish-belly girders, the weight of lading must not exceed three-quarters (¾) of the capacity of the car."

RULE 15-B.— Omit reference to flat cars with two truss rods.

Explanation: For reasons given under Rule 15.

This would make the rule read as follows:

"For loads carried on one bearing-piece per car (with or without sliding pieces) located about equal distance from center of car and center of truck: On flat cars having more than two truss rods, and on low-sided gondola cars, the weight of lading must not exceed three-quarters (¾) of the capacity of car."

RULE 22.— Insert "Or sliding-pieces" in first line after words "bearing-pieces." The height of sliding-pieces should be limited as well as bearing-pieces.

Change last sentence in rule to read as follows:

"For structural material the bearing-pieces must be securely fastened to the floor of car as per Rule 72. For lumber, logs, telegraph poles, piling and props, on open cars loaded as per Figs. 6, 8, 9, 10 and 11, the bearing-pieces must be securely held in place by cleats as per Fig. 11-A."

Explanation: Loads of lumber, logs, poles, etc., have been loaded with the bearing-pieces secured in the manner described for a number of years, and as these bearing-pieces do not become displaced, it is recommended that this method of securing bearing-pieces for lumber loading be specified, the lumber shippers being averse to securing the bearing-pieces with bolts.

This would make the rule read as follows:

"Where the dimensions of bearing or sliding pieces are not otherwise specified, they must be of sufficient thickness to keep the lading four (4) in. from the floor or end gates of carrying car and idler, and must extend the full width of car. Bearing-pieces more than five (5) in. high may be built up of lumber of ample strength or take the shape of cribbing or rolled or built-up steel construction. Bearing-pieces, sliding-pieces, chocks, headblocks, etc., must have a width of base at least equal to their height. For structural material the bearing-pieces must be securely fastened to the floor of car as per Rule 72. For lumber, logs, telegraph poles, piling and props, on open cars loaded as per Figs. 6, 8, 9, 10 and 11, the bearing-pieces must be securely held in place by cleats as per Fig. 11-A."

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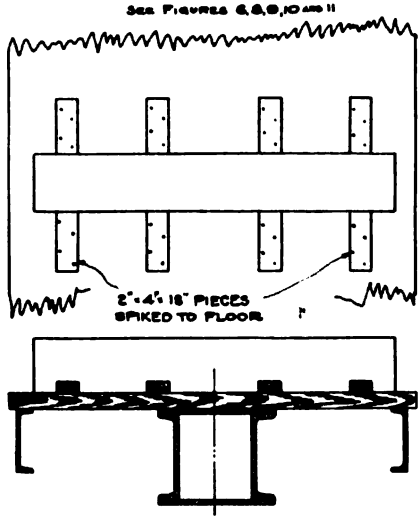
FIG. 11-A.
RULE 22.
MANNER OF BLOCKING BEARING-PIECE FOR LUMBER, LOGS, TELEGRAPH AND TELEPHONE POLES, PILING AND PROPS
SEE FIGURES 6, 8, 9, 10 AND 11



RULE 23.— In first line change "and" to "or." The rule is intended to limit the location of sliding-pieces as well as bearing-pieces.

This would make the rule read as follows:

"Bearing-pieces or sliding-pieces must never be placed between bolster and end of car, unless special provision is made therefor in detail instructions. When there is but one bearing-piece on a car, it must be placed at least twelve (12) in. from center of bolster toward center of car."

RULE 26, fifth line.— Omit word "of" between the words "end and sill."

Explanation: End sill is intended.

This would make the rule read as follows:

"The cars must be jacked apart by placing one jack on each side of the coupler, separating the cars until the couplers are pulled out to the fullest extent, inserting hardwood or metal blocks to completely fill the space between horns of coupler and end sill, disconnecting the lock-pin connection if secured to body of car, as shown in Figs. 2 and 3."

The following cuts of single loads do not show a hand brake on cut. One hand brake should be shown on each cut:

Figs. 17, 18, 18-C, 31, 33-A, 61-A, 64, 64-A, 64-B, 64-C, 66-A, 66-B, 66-C, 67, 68, 68-A, 69, 70, 71, 72 and 73.

The following cuts for single loads should show but one hand brake — the minimum requirement:

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Figs. 14, 15, 17-A, 18-A, 18-B, 19, 27, 28, 31-A, 33-B, 57, 58, 59, 60, 60-A, 65 and 66.

All hand brakes except one should be eliminated from the following cuts:

Figs. 3, 5, 9, 10, 11, 12, 13, 39, 40, 41, 42, 43-A, 43-B, 47, 48, 49, 50, 51.

Explanation: To make cuts conform to Rule 18. Add a note to the above cuts as follows:

"NOTE.— Brakes may be located as the load will permit."

Explanation: To permit of cars being placed for loading in any manner in which there will be one operative hand brake, within the prescribed limits as covered by the rules.

Figs. 12-A and 13-A do not conform to end view as shown on cuts 12 and 13, respectively, and are not properly located in code. End view shown on cuts 12 and 13 should be replaced by Figs. 12-A and 13-A.

Figs. 15 C and D, reference to hardwood stakes 4 by 5 in., should be changed to 4 by 4 in., to make cuts conform to Rule 58.

RULE 72.— Change the word "blocks" in second and fifth lines to "pieces."

Explanation: These are "bearing-pieces," not "bearing blocks."

This would make the rule read as follows:

"Large girders loaded on flat side on flat cars must always be carried upon bearing-pieces not less than six (6) in. by twelve (12) in. in section, bolted to the car floor with 7/8-in. bolts. Bearing-pieces must be placed near each bolster and not more than eighteen (18) in. from center line of bolster. Two (2) in. by four (4) in. by eighteen (18) in. cleats must be placed longitudinally under the floor and must be secured by means of bolts with cut washers under bolt heads and nuts. Spacing blocks not less than two (2) in. by twelve (12) in. in section must be placed between consecutive girders. Lateral motion must be prevented by fitting boards between the flanges of the girders, as shown in Fig. 22. Girders may be clamped together as shown in Fig. 21. When so loaded, the blocking used must not be less than three (3) in. by eight (8) in. in section for bearing blocks on car floor, two (2) in. by eight (8) in. in section for spacing blocks and four (4) in. by six (6) in. in section (hardwood) for top tie boards. The vertical rods must not be less than one (1) in. in diameter, and must, if possible, pass through the blocking and floor of car. With loads twenty-four (24) in. high or over, braces must be added as shown in Fig. 46. If rivet holes are not available, longitudinal motion must be prevented by using clamps. See Fig. 21.

RULE 78.— Change to read "Clamping pieces on top of load," instead of "on top of sides of cars," as the clamping-pieces are always placed on the load and not on car sides.

This would make the rule read as follows:

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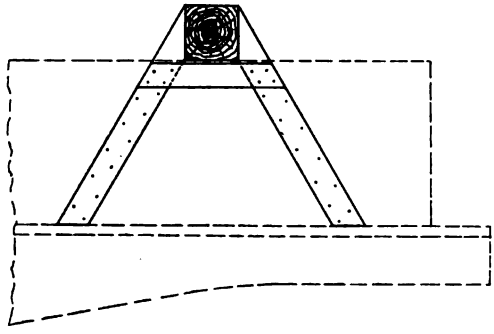
"If the depth of load is more than twenty-four (24) in., the bracing for clamping-piece on top of loads must be the same as shown in Fig. 46."

Page 68, Fig. 32; page 69, Fig. 33; page 80, Fig. 44, and page 81, Fig. 45.— Change the fish-tail brace for bearing-pieces to angular braces, as per cut "A."

CUT A

BRACING FOR BEARING-PIECES, PAGE 69, FIG. 32, PAGE 69, FIG. 33, PAGE 80, FIG 44, AND PAGE 81, FIG. 45



Explanation: The fish-tail brace with bolt to prevent splitting is not generally used by shippers. Experience has shown that the recommended design is sufficiently strong and can be more readily applied.

RULE 81-D.— Fifth line, page 71, should be changed to read: "Three or more vertical straight-grain hardwood posts; also there should be shown on cut 33-B, 2 by 6 in. hardwood timbers securely bolted between upright posts and side of car and extend 6 in. above top of lading to prevent lading shifting sidewise.

This would make the rule read as follows:

"Plates too wide to be loaded flatwise on gondola or flat cars may be loaded diagonally on wooden gondola cars, one side of the load resting on two bearing-pieces securely fastened to the car floor; on the same side of car two (2) straight-grain hardwood pieces 4 by 6 in. to be securely fastened to car side, the other side supported by three (3) or more vertical straight-grain hardwood posts 6 by 8 in. in section of sufficient height that when plates are placed diagonally across the car they will extend from one side across to full width of upright posts. These posts to be securely bolted to side of car with two (2) ⅞-in. bolts, also secured by one diagonal rod not less than ¾ in. in diameter passing through each post within 8 in. of top and through opposite side of car 4 in. above car floor, and tied together with 1 by 4 in. hardwood boards, nailed to each vertical post with not less than three (3) tenpenny nails. If the load is

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made up of two (2) tiers, one on each end of car, the total load must not exceed 75 per cent of the marked capacity of car. If the plates are too long to be loaded in two tiers, they may be loaded at the center of the car in one tier, the load not to exceed 50 per cent of the marked capacity of the car. Fig. 33-B shows substantially how bearing-pieces are to be made and secured."

RULE 82, first paragraph, third line.— Change words "bearing-piece" to "sliding-piece." Sliding-pieces are intended.

This would make the rule read as follows:

"If the overhanging material is very flexible and interferes with the end boards of the adjacent car, a suitable sliding-piece, protected by a strip of iron, must be placed on the adjacent car to support the material.

"Where the overhang is flexible material and the weight not excessive, a 6 by 8 in. post of sufficient length may be bolted to inside of end of car to support overhang in lieu of sliding-pieces placed on adjacent car."

Fig. 34, page 73.— Change to read: "Must not exceed 65 ft." Also add to first line of note under figure "box girders, columns, one-half roof trusses and similar material." To make cut conform to Rule 85.

Page 78, Figs. 43-A and 43-B.— Sliding-pieces should not be shown outside of bolsters toward end of car, as this location is prohibited by Rule 23.

RULE 91.— Change to read: "When gondola cars are used for twin loads a clearance of at least eighteen (18) in. on each side between the load and car sides and end-gate stops at narrowest point; and when used for continuous triple loads at least thirty-nine (39) in. must be provided for curving. See Fig. 12; also change Fig. 12 to conform to new rule.

Also add a note to rule, reading as follows:

"NOTE.— As the specified clearances are to take care of road rather than terminal conditions, precautions should be exercised at terminals where short curves exist to prevent damage to sides of cars."

Explanation: Triple loads are being placed on gondola cars and the rule has been revised to cover the clearance between load and side of car under these conditions.

RULE 93, page 85.— Change "22 in." in fourth line to "18 in." To making sliding-irons conform to clearance limits.

This would make the rule read as follows:

"Long flexible material, like plates, etc., which can not be loaded as shown in Fig. 24, must be loaded on two bearing-pieces, and two or more sliding-pieces, as in Figs. 41, 42, 43, 43-A and 43-B. The sliding-pieces must be four (4) in. lower than the bearing-pieces and must have flat iron ¼ in. by six (6) in., secured to their upper sides either with spikes or lag screws at each end. These iron pieces, which are intended to facilitate curving, must extend at least eighteen (18) in. beyond each side of the lading and must be coated with grease before the lading is placed upon them. The bearing-pieces must be secured to the car and the mate-

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rial clamped together in the same manner as described in Rules 72 and 80 to prevent it from shifting."

RULE 98.— The last sentence should be changed to read as follows:

"Rolling freight must be loaded longitudinally with car and must be chocked to prevent side motion. Substantial blocking should be placed across end of car at end of load to prevent end of car being cut by material shifting endwise."

This would make the rule read as follows:

"Rails, bar iron, channels, angles, etc., should, whenever possible, be loaded on single gondola cars inside of end gates, which must, in all cases, be raised and securely fastened. Rolling freight must be loaded longitudinally with car and must be chocked to prevent side motion. Substantial blocking should be placed across end of car at end of load to prevent end of car being cut by material shifting endwise."

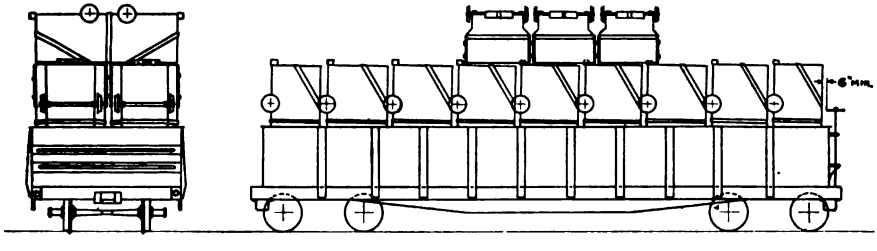
RULE 117-C.— Change blocking on Fig. 61-A from "6 in. by 6 in." to "2 in. by 2 in."

Explanation: 2 by 2 in. blocking is sufficient.

Also change rule to read as follows:

"Mining cars and similar vehicles should be loaded and substantially braced and wired according to Figs. 61-A, 61-B, 61-C or 61-D."

FIG 61-B.
RULE 117-C
MANNER OF LOADING MINING CARS AND SIMILAR VEHICLES IN GONDOLA CARS.



Explanation: The rule has been changed to take care of, in a general way, the manner of loading the various designs of mining cars and similar vehicles.

Fig. 64-D.— Change angular chocking from "8 in. by 10 in. by 24 in." to "not less than 6 in. by 8 in. by 16 in."

Explanation: 6 by 8 by 16 in. chocking is sufficient.

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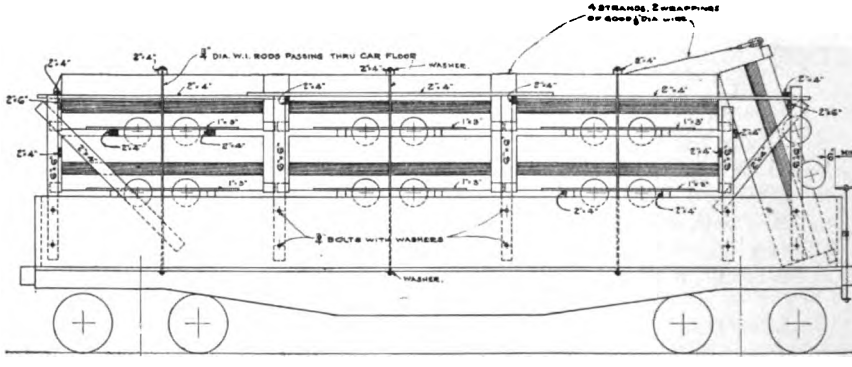
FIG. 61-C.
RULE 117-C

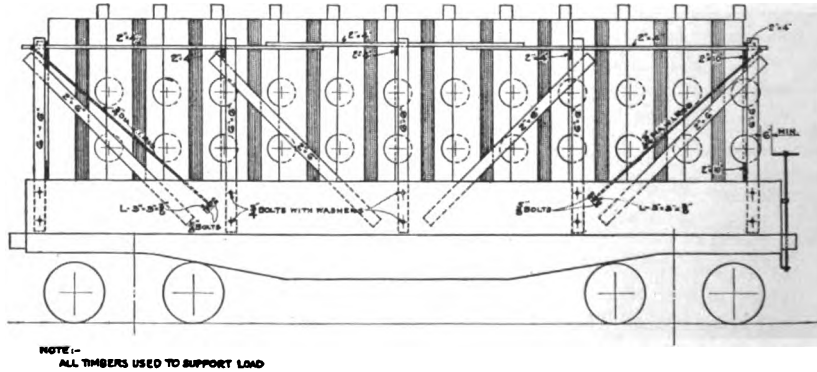
MANNER OF LOADING MINING CARS IN GONDOLA CARS WITH SIDES LESS THAN 44" IN HEIGHT.



NOTE:-
ALL TIMBERS USED TO SUPPORT LOAD MUST BE HARDWOOD.
SIZES GIVEN ARE MINIMUM.

FIG. 61-D.
RULE 117-C.

MANNER OF LOADING MINING CARS IN GONDOLA CARS WITH SIDES LESS THAN 44" IN HEIGHT.



NOTE:-
ALL TIMBERS USED TO SUPPORT LOAD MUST BE HARDWOOD.
SIZES GIVEN ARE MINIMUM.

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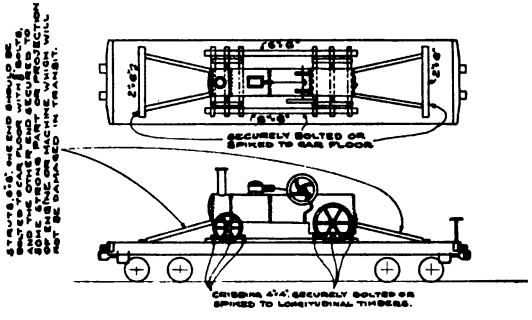
Also insert Fig. 64-E, showing engine blocked by 4 by 4 in. cribbing, and make reference to Fig. 64-E in Rule 121-B.

FIG. 64-E
RULE-121-B
MANNER OF LOADING ENGINES AND SIMILAR MACHINERY.



Explanation: Change to permit of either method of blocking.

The following rule should be added to the code to cover shipments of derrick cars and similar machinery having swinging booms:

"RULE 121-C.— Derrick cars, and similar machinery when shipped on their own wheels or otherwise, the swinging booms must be substantially secured to prevent swinging in transit."

RULE 122.— Change heading to read: "Rules Governing Loading of Plate Glass on Flat or Gondola Cars."

Add a new paragraph to Rule 122, as follows:

"When a number of boxes containing plate glass are loaded on gondola or flat cars they should be loaded vertically, one tightly against the other with one end of all boxes flush, and blocked along the side of outside boxes and at both ends of each box on floor of car with not less than two (2) by four (4) in. blocks, ten (10) in. long. Diagonal braces of not less than two (2) by six (6) in., securely nailed at top of outside boxes, and braced and cleated at bottom to sides or floor of car to prevent shifting, should be used. Three horizontal ties not less than one (1) by four (4) in. should be securely nailed to the diagonal braces and ends of boxes where they are flush. At opposite end diagonal braces, not less than two (2) by six (6) in. should be used to brace each set of boxes of the same length, or each box if of different lengths. See Fig. 64-F."

Explanation: The present rule only covers a single box of plate glass, but in practice this is the exceptional shipment. Usually a large number of boxes are loaded on the same car and the rules should cover same.

This would make the rule read as follows:

"Large pieces of plate glass carried on flat cars and gondola cars should be loaded vertically and substantially secured by cleats on the floor. Side brace at ends must be provided as shown in Fig. 64.

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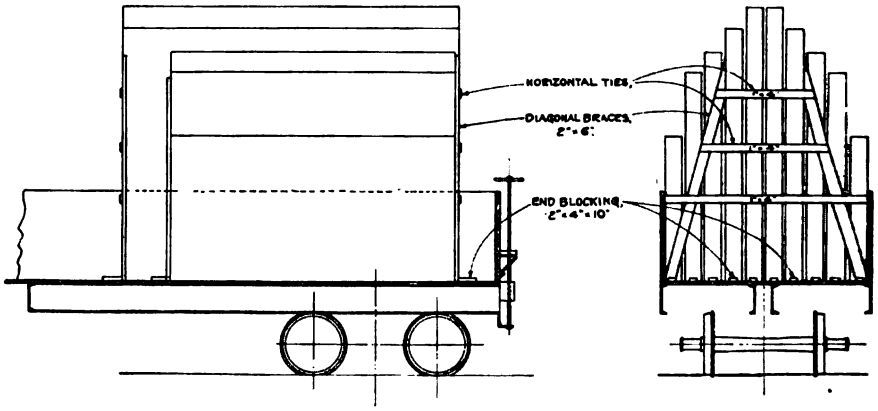
"When a number of boxes containing plate glass are loaded on gondola or flat cars they should be loaded vertically, one tightly against the other, with one end of all boxes flush, and blocked along the side of outside boxes and at both ends of each box on floor of car with not less than two (2) by four (4) in. blocks, ten (10) in. long. Diagonal braces of not less than two (2) by six (6) in., securely nailed at top of outside boxes, and braced and cleated at bottom to sides or floor of car to prevent shifting, should be used. Three horizontal ties not less than one (1) by four (4) in. should be securely nailed to the diagonal braces and ends of boxes where they are flush. At opposite end diagonal braces, not less than two (2) by six (6) in. should be used to brace each set of boxes of the same length, or each box if of different lengths. See Fig. 64-F."

FIG. 64-F.
RULE 122.
MANNER OF LOADING PLATE GLASS ON FLAT OR GONDOLA CARS.



RULE 123-A.—Change first line to read: "Iron ore, limestone and similar heavy materials, transported."

Explanation: This rule has been extended by specifying "limestone" in addition to iron ore, as this material is also causing trouble, due to spreading the sides when not loaded as described in the rules.

This would make the rule read as follows:

"Iron ore, limestone and similar heavy material, transported in open cars, should be loaded as shown in Fig. 66-D."

Page 135, Note under heading.—Change to read: "The agent or inspector at the loading point must see that the rules for loading material in closed cars are strictly enforced. Where opportunity is provided, the lading should be inspected in transit."

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Explanation: Considerable trouble from derailments, broken doors, doors falling off, etc., is being experienced, due to improperly loading or stowing of freight in closed cars. After the car is loaded no opportunity, as a rule, is provided for inspection. The addition to the note is recommended to indicate that the loading in closed cars must be supervised to bring about an improvement in present conditions.

This would make the heading read as follows:

"Rules Governing Loading Material in Box and Stock Cars:

"NOTE.—The agent or inspector at the loading point must see that the rules for loading material in closed cars are strictly enforced. Where opportunity is provided, the lading should be inspected in transit."

RULE 124.—Add a sentence to the end of rule reading as follows: "The lading must be so placed in the car that there will not be more weight on one side of the car than on the other."

Explanation: This is the same addition that was made to Rule No. 8 to provide for the proper distribution of the lading on cars.

Add a new paragraph reading as follows: "When necessary to nail cleats or braces to lining of box cars having steel superstructure without exterior siding, the nails must not be driven entirely through the lining."

Explanation: A large number of cars have been built with a single course of lining and steel frame superstructure. When nails for securing chocks and bracing for lading are driven through the single course of boards it splits the lining and leaves an opening when the nails are withdrawn.

This would make the rule read as follows:

"Lading must be secured in closed cars so that it will not come in contact with side doors or roll or shift in transit. Cars equipped with protection slats nailed to outside of door posts or to doors will not be accepted. Cars without doors and containing freight of a character requiring protection must have the lading protected from falling or rolling out of car by strips or slab wood, not less than 1½ in. thick at center, nailed to inside of door posts, and sufficiently close to floor of car and to each other to prevent lading from passing between them. The lading must be so placed in the car that there will not be more weight on one side of the car than on the other.

"When necessary to nail cleats or braces to lining of box cars having steel superstructure without exterior siding, the nails must not be driven entirely through the lining."

A new rule reading as follows should be added to the code:

"RULE 124-A.—Brick 15 in. and less in length loaded crosswise at doorway do not require door protection if built up as per Fig. 68-B. Brick of any length loaded lengthwise at doorway must have door protection as per Fig. 68-C."

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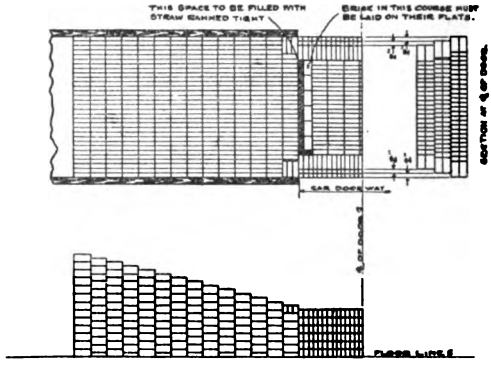
FIG. 68-B.
RULE 124-A.
MANNER OF LOADING BRICK 15" AND LESS IN LENGTH, WITHOUT DOOR PROTECTION.


THIS SPACE TO BE FILLED WITH STRAW RAMMED TIGHT
BRICK IN THIS COURSE MUST BE LAID ON THEIR FLATS.
SECTION OF CAR DOOR
CAR DOOR WAY
FLOOR LINE OF CAR

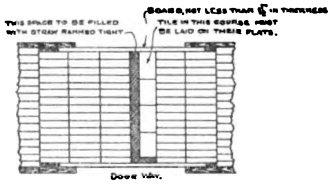
Explanation: This method of loading brick has been used successfully by shippers for years.

It has been suggested that the following paragraph be added to this rule:

"Cost of applying door protection should be charged to the originating line, whether discovered at the time of interchange, or in transit."

Your committee believes that the improper loading of closed cars should be taken care of by the originating line, but does not believe this comes within the scope of its work. Your committee thinks the suggestion should be referred to the A. R. A.

FIG. 68-C.
RULE 124-A.
MANNER OF LOADING BRICK WHEN DOOR PROTECTION IS REQUIRED.


THIS SPACE TO BE FILLED WITH STRAW RAMMED TIGHT
BOARDS NOT LESS THAN 1" IN THICKNESS
TILE IN THIS COURSE MUST BE LAID ON THEIR FLATS.
DOOR WAY.

RULE 131.— Should be changed to read as follows: "When material loaded in stock cars is liable to work through the space between the slats, these spaces must be sufficiently sealed to prevent loss of material, or ends of material working through the spaces."

Explanation: The change in this rule is made to cover all material that is liable to work through the openings between the slats of stock cars. Trouble has been experienced with lumber working out through these openings.

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RULE 132.— In the first line, after the word "pipe," omit words "drain tile." After word "separated," in second line, change to read "by not less than ½ by 2 in. hardwood strips."

Explanation: (1) New Rule 132-A has been added to take care of the manner of loading drain tile. (2) Laths are too light for use as parting strips between sewer pipe.

This would make the rule read as follows:

"Sewer pipe in closed cars should be loaded in tiers, separated by not less than ½ by 2 in. hardwood strips. The space between the tiers at door opening should be braced as per Fig. 73. When one-half or more of one length of pipe extends beyond door opening, such tier must be protected on each side by means of sound wood, 2 by 4 in. in section, or slabs nailed to inside of plates and secured at floor by means of cleats spiked to floor of car. If full length of pipe extends beyond door openings, such tier must be protected by two pieces of 2 by 4 in. sound wood or slabs on each side, secured as specified above for single piece on each side."

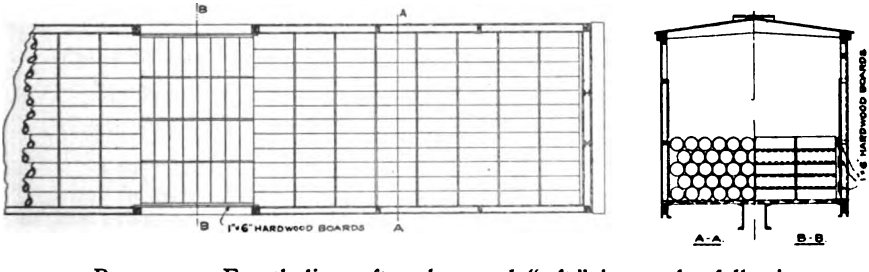
A new rule covering the manner of loading drain tile, reading as follows, should be added to code:

"RULE 132-A.— Drain tile loaded in closed cars. Tile 8 in. in diameter and under should be loaded in tiers as per Fig. 73-A (see Rule 130 for required door protection). Tile 10 in. to 28 in., inclusive, in diameter, should be loaded as per Fig. 73-B, and 30 in. in diameter and over should be loaded as per Fig. 73-C."

FIG. 73-A

RULE 132-A

MANNER OF LOADING
DRAIN TILE, 8" IN DIAMETER AND UNDER.



RULE 133.— Fourth line, after the word "aft," insert the following:

"Machinery resting on legs should be securely braced and propped at ends in addition to the floor strips to prevent breakage by shifting."

Explanation: Unless machinery of this kind is loaded in a substantial manner to relieve strains from such parts, damage is liable to occur.

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FIG. 73-B.

RULE 132-A.

MANNER OF LOADING DRAIN TILE 10" TO 28" IN DIAMETER.

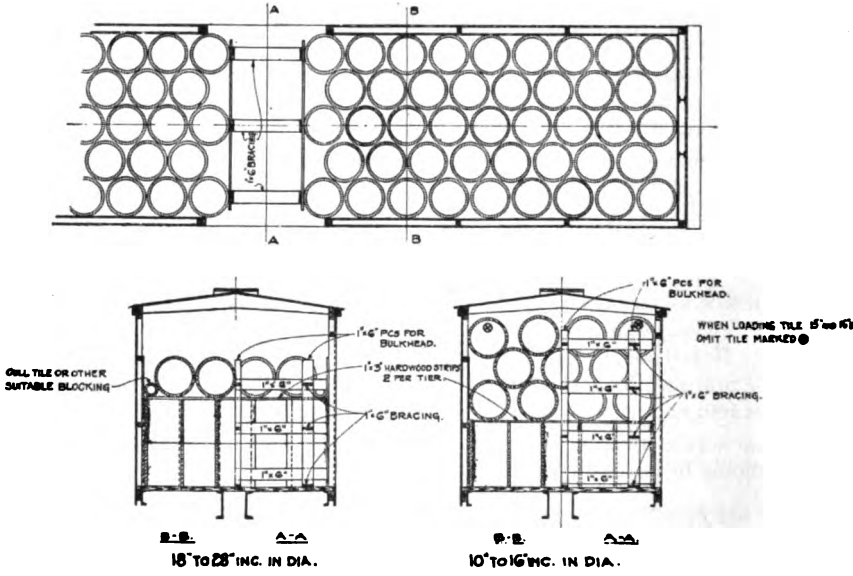
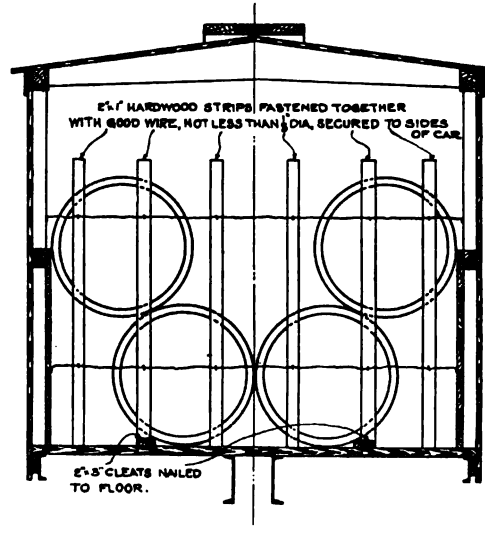


FIG. 73-C.

RULE 132-A.

MANNER OF LOADING DRAIN TILE 30" IN DIA. AND OVER.


2"x1" HARDWOOD STRIPS FASTENED TOGETHER WITH GOOD WIRE, NOT LESS THAN 9 DIA, SECURED TO SIDES OF CAR.
2"x3" CLEATS NAILED TO FLOOR.

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This would make the rule read as follows:

"If box cars are used for loading heavy machinery, such as lathes, planers, boring machines, etc., each machine should be blocked by securely nailing to floor of car 2 by 4 in. hardwood strips fore and aft. Machinery resting on legs should be securely braced and propped at ends in addition to the floor strips to prevent breakage by shifting."

A. KEARNEY, Chairman,
L. H. TURNER,
J. M. BORROWDALE,
C. N. SWANSON,
G. H. GILMAN,
A. B. CORINTH,
R. L. KLEINE,
Committee.

ROANOKE, VA., April 28, 1914.

MR. KEARNEY: The errors were made in the printing of the letter ballot, but your committee when preparing the proof found it necessary to effect certain minor corrections in some of the rules to make them agree with what was intended and really what will be found to be the present practice.

MR. HENNESSEY: Mr.. Chairman, I move that the action of the committee be approved.

Motion seconded.

THE PRESIDENT: You have heard the motion. Is there any discussion? If not, all those in favor say "aye"; contrary, "no." Carried.

Mr. Kearney continued the reading of the balance of the report in abstract.

Mr Kearney continued by reading the following supplement, which was presented as a part of the foregoing:

Your committee since sending their report to the printer have received from further suggestions for changes in the loading rules, as follows. We would like to submit for consideration along with the balance of the report:

RULE 118.— Paragraph under "End Protection" should be changed to read 3 by 4 in. strips in the fourth line, instead of 4 by 4 in. strips.

EXPLANATION.— A 40-penny nail driven through a 4 by 4 in. strip will extend into the floor of the car but 1 in., and toe-nailing is of very little use.

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The paragraph would then read as follows:

"For cars not provided with stake pockets the necessary end protection must be secured by toe-nailing stakes against the inside edge of a hardwood strip not less than 3 by 4 in. in section (or two strips 1½ by 4 in. in sections, securely nailed to the floor of car, one on top of the other) placed crosswise of the car and inside of the end sills. The stakes should extend at least 4 in. above the load and must be wired back to the side stakes in the first or second pocket."

It is also the desire to make another change in Rule 119-C, although it was only recently brought to our attention.

Second paragraph, third line.— Change 4 by 4 in. strips to 3 by 4 in. and add "Stone not having a full 1-in. vertical bearing its full width against the strip, an additional thickness to get the required bearing must be secured opposite such stone."

This would make the paragraph read as follows:

"Stone not having a full 1-in. vertical bearing the full width of stone against the strip, an additional thickness to get the required bearing must be secured opposite such stone."

Notwithstanding we have had a good many years' experience with the loading rules, new subjects and new phases are being brought to our attention almost daily and suggestions are enumerated, indeed almost as many as we have men working on them in the car department. The lesson to be gained, we should say, is that we must go very slowly in their preparation, but this I am sure your committee is endeavoring to do. Your committee has received a number of propositions it has not yet been able to consistently incorporate in the code and mainly for the reason that it is believed many of them require very careful study and probably some modification. Still it does not mean they may not be of value and very important regulations. For instance, we have members of the committee strongly advocating qualifying Rule No. 93 where it specifies a ¼-in. sliding piece under the load. The contention is made, though by the minority, that the ¼-in. strip should be limited for certain loads, that is to say, for loads exceeding certain weights should be carried on a ½-in. strip. The committee is not yet sure that this is necessary or the best thing to do, but would prefer to let the old rule remain until the point can be investigated, and if necessary and desirable a flyer to cover whatever modification is needed can be issued during the year.

Similarly, some additions and some further regulations have been urged in the loading of mine cars. Observations have been made by a portion of the committee, but the committee as a whole has not yet been able to reconcile all of the propositions, though it is believed they are very important and we will probably have to cover them during the year by the issuance of a flyer, provided a satisfactory solution can be reached.

THE PRESIDENT: You have heard the report, gentlemen; if there are no objections the corrections and additions made by the

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Chairman will be made in the printed report when finally issued. The Secretary will make a note of that. What action do you wish to take on this report?

SAMUEL LYNN (P. & L. E. R. R.): Mr. President, I have listened with considerable interest to the report of the chairman of this committee, and I believe that every member of this Association knows, or has at least some idea, of the amount of work that this committee is doing from year to year, in addition to the time that they devote and the money that is spent by them to get these rules so that we can have them for our guidance. A number of shippers, the larger shippers over the country, are working with the committee, sending representatives and spending their money in order to get rules that will transport their freight safely over the country.

It seems to me that through the efforts of our committee and the assistance of the manufacturers, we now have a complete set of rules with which we can handle most anything that is offered to us, and I want to say that instead of needing more loading rules, I believe that this Association should adopt some rule to compel some shippers to live up to the rules that we already have. There are some of the shippers that will not meet the requirements of these rules, as they will not furnish the material required, and I know in our territory when you go and talk with them and try and have them use the material which they should use, they will say, "there is the load. You take it, or your competitors will take it." That is one condition. I am sorry to have to say that where loads are rejected because they were not loaded in accordance with these rules, and were held up, they were then offered to another company — a competing line — and were accepted without any adjustment of the load, the road accepting the load making the adjustment.

Now, Mr. Chairman, it seems to me, as I said in the beginning, that what we need more than anything else is a rule by this Association that will back up the work of this committee, and when one road is enforcing the rules, or trying to enforce them, they should not be penalized by losing the shipment, but the other road taking that shipment without any work at all being done on that load should be penalized.

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I bring this to the attention of the convention this morning, as I believe this is the time and place for whatever action is necessary.

MR. R. W. BELL (Ill. Cent. R. R.): Mr. President, I thoroughly agree with the gentleman who has just spoken, that what we need is an enforcement of the present rules. There is one thing that is damaging our equipment more than anything else, and that is improper loading, and as the gentleman who has just spoken said, if one road did not take it when it was improperly loaded, the other would take it. Now that is wrong, and this convention should go on record as being strongly opposed to such a thing as that. The cars in a great many cases are not properly loaded.

MR. GOODNOW: Mr. President, I should like to call attention to the recommendation of the committee on page 14: "Cost of applying door protection should be charged to the originating line whether discovered at the time of interchange, or in transit." There is probably no one item of the loading rules at the present time that is causing more trouble than this question of door protection. On account of the difference in the operating conditions of railroads some railroads feel that the door protection should be had, where others probably feel that it should not be required, and that is bringing up just the condition that Mr. Lynn spoke of, that a road that is not requiring same is being cited to other roads that are requiring it, and that we are putting an expense on the shippers that is unnecessary. Now, the unfortunate part of the door protection as it stands at the present time is that it is too general. I am not prepared to suggest how it could be detailed more than it has been, but if there is any way of detailing how and when door protection should be provided, and when it should not be provided, I believe it would clear up the question, and relieve a great deal of trouble and controversy that is occurring at the present time, especially at the larger terminals, where the interchange is being handled under interchange bureaus. If the recommendation should prevail and nothing more definite in the rules to govern door protection, I fear it will greatly complicate this matter.

MR. MACBAIN: In connection with the remarks that have

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been made on the non-observance of the rules, and in particular connection with the matter of guarding doors, we have right in our district at Cleveland a great deal of trouble in that respect. We feel that it is necessary that the rules should be observed. We are greatly interested in the matter of protecting loads at the doors, by the observance of the rules, because of the character of service we run on the Lake Shore Road. We have some very fast freight trains running over our system, and there is an epidemic of trouble through the doors bulging out, and for other similar causes. We are trying to enforce the rules, but have a great deal of trouble. We find in nearly every instance where we attempt to enforce the rules that the shipper will say—"Well, such and such a road does not exact that; they will take the load without that; if you do not take it, they will."

Those are the exact conditions, and I was going to suggest the advisability of this Association writing a letter to the American Railway Association and have that association exercise whatever authority it could toward having a more general observance of these rules. It is a very serious proposition, Mr. Chairman, and one that I believe ought to receive pretty stiff action.

MR. DEVOY: I move that the report be accepted and referred to letter ballot.

MR. KEARNEY: In reference to that matter, you will note the committee has suggested that it be laid before the American Railway Association. I allude to the paragraph found about the middle of page 14 of our report; excepting this, I should say it would be very proper to submit the report to letter ballot.

THE PRESIDENT: I assume that the Secretary would recognize that fact in referring it to letter ballot. He would go through the report and refer such parts of the rule as called for action on the part of the members to letter ballot.

All in favor of the motion to approve the report and submit it to letter ballot say "aye"; contrary minded, "no." The motion is carried.

Before taking up the next report I should like to ask the members of the Executive Committee and the members of the Arbitration Committee to stop for a few minutes at the close

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of this session for a conference on two or three matters which require immediate action.

The next report is that of the Committee on Overhead Inspection of Box Cars, A. Kearney, chairman.

Mr. Kearney presented the report, as follows:

REPORT OF COMMITTEE ON OVERHEAD INSPECTION OF BOX CARS.

To the Members:

Following the procedure indicated last June, your committee, when it was called upon by the American Railway Association sub-committee, explained to them in detail the code of rules for the Overhead Inspection of Box Cars, formulated at their suggestion. The proposed code was gone over with the American Railway Association Committee, studied at length, and several changes were made, without, however, disturbing its general plan or principle. The code as finally accepted by the American Railway Association Committee was submitted to the Executive Committe of that Association, and was later laid before the American Railway Association at their semi-annual conference, held in Chicago, November last.

Your committee has advice from Mr. Arthur Hale that the report and code of rules alluded to were accepted by the American Railway Association and were proposed as a recommended practice. It is the understanding of your committee that the railroads will, through the American Railway Association, be asked to give the project a thorough trial. Your committee wishes to ask that should the proposition be given a thorough trial by any railroads desiring to take hold of the work along the lines indicated in the committee's report, and objections are found (as doubtless there will be), the circumstances shall be fully explained to the committee, so that the card or code may be improved in detail, rather than set them to one side as a whole, should they not perhaps meet certain local conditions. They believe such a course will be more effective and will enable them, if possible, to more quickly determine desirable practices.

Your committee in making this explanation of the status of the work also wishes to advise it is their understanding that their work is now at an end temporarily, that is, until some report is made pointing out needed alterations in the card or code.

It has occurred to your committee that through some cars not completely reaching the requirements of the code, an opportunity will be offered for a careful check of same, which will readily indicate the additional repairs necessary and at the same time enable railroads to compute the cost that will be entailed to reach the physical condition indicated by

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the card, or afford an opportunity to ascertain wherein the requirements are too severe.

No railroad can do very much alone; on the contrary, the general condition sought by the use of the card can only be effectively reached through each road doing its share.

The card and code of instructions as finally accepted by the American Railway Association as a recommended practice, are as follows:

INSPECTION AND CERTIFICATION OF BOX CARS BEFORE LOADING WITH FREIGHT SUBJECT TO DAMAGE.

(Recommended Practice subject to such changes as may be required to meet local or special conditions.)

NOTE.— This inspection does not cover cars for explosives or other dangerous articles provided for by the Regulations of the Bureau of Explosives.

Freight as described below must be loaded in certified cars which have received a special inspection in accordance with the following instructions.

If cars pass the special inspection, this will be indicated by an inspection certificate which will be tacked on each side of the car below the car number.

CLASSIFICATION OF EQUIPMENT SUITABLE FOR THE FOLLOWING FREIGHT.

Classification "A."— Package freight liable to loss or damage by water, protruding nails, material carrying odors, oil, grease, or moisture on interior of car, especially the floor.

Classification "B."— Bulk freight liable to damage by water or to loss through small openings.

Classification "C."— Freight liable to loss or damage by water or protruding nails, but which can not be lost through small openings.

The face of inspection certificate should be printed as follows:

INSPECTION CERTIFICATE.
NORTH & SOUTH RAILROAD.
Car Initial..... No.....
O. K. for shipment of commodities

Under [ ] Classification.

Inspected by.....
Date.....19... Station.....

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On back of card, inspection instructions should be printed as follows:

INSPECT FOR

and see that car is free from following defects:

Classification "A."	*Classification "B."*	*Classification "C."*
Leaky roof.	Leaky roof.	Leaky roof.
Loose siding.	Loose siding.	Loose siding.
Loose roof boards.	Loose roof boards.	Loose roof boards.
Shifted roof sheets.	Shifted roof sheets.	Shifted roof sheets.
Broken door stops.	Broken door stops.	Broken door stops.
Leaky doors, tops and sides.	Leaky doors, tops and sides.	Leaky doors, tops and sides.
Broken end posts.	Broken end posts.	Broken end posts.
Broken or loose door posts.	Broken or loose door posts.	Broken or loose door posts.
Protruding nails in floor and lining.	Holes in floor and around center plates and draft bolts.	Protruding nails in floor and lining.
Floors or sides soiled by oil, grease or any material carrying odors likely to damage lading.		

(A) When there are inspectors located at points of loading the inspection will be made and certificates attached at that point.

(B) Where inspectors are located at a point from which empty cars are distributed to stations the inspection will be made and certificates attached at that point. This inspection will be confirmed by agent at loading point.

(C) In all other cases the agent at loading point should inspect the car and file certificates as below.

Aside from the Master Car Builders' inspection of car, including roof, running boards, air brakes, safety appliances and running gear, as well as the external inspection of sides, ends, doors, ventilators and windows, before inspection certificate is issued, an internal inspection must be made.

1. Search for loose, damaged and broken boards, loose knots, knot holes, bad joints, etc.

2. Search for all nails, spikes, screws and bolts extending above surface of floor and lining and nails protruding through roofing.

3. Search for water stains indicating cracks and air spaces.

4. Examine for metal sheets out of position along edge of sub-car line or down from edge of ridge pole.

5. Doors must open and close properly.

6. Inspect closely for defects in framing which might, by reason of their weakness, allow the sheathing to readily be broken or damaged.

Close doors, ventilators and windows and

7. Search for light indicating openings and cracks which might produce leaks.

8. Search for cracks sufficient to admit storm water beating through opening; also for openings and bad joints around window and doors.

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When a car is loaded by a shipper the inspection certificates must be detached from the car and delivered to agent before bill of lading is issued. All certificates finally must be filed by the agent at point of loading for future reference.

A. KEARNEY, Chairman,
L. H. TURNER,
C. N. SWANSON,
J. M. BARROWDALE,
G. H. GILMAN,
A. B. CORINTH,
R. L. KLEINE,

Committee.

THE PRESIDENT: The report is now before you for discussion.

MR. GOODNOW: I move that the report be accepted and the committee continued, as they have asked.

THE PRESIDENT: It is moved and seconded that the report be accepted and the committee continued. Is there any discussion on the motion? If not, all in favor say "aye"; opposed, "no." The motion is carried.

The next report is that of the Committee on Rules for Loading Material on Interline Loading of Commodities, A. Kearney, chairman.

Mr. Kearney presented the report, as follows:

REPORT OF COMMITTEE ON RULES FOR LOADING MATERIAL ON INTERLINE LOADING OF COMMODITIES.

To the Members:

The establishment of a uniform code of rules for the Interline Loading of Commodities, a subject referred to your committee for investigation, was received rather late in the year; indeed too late to permit the research it evidently requires. Hence your committee is only able at this time to offer a report of progress, with the assurance that an effort is being made to ascertain what seems to be necessary to satisfactorily meet the requirements.

Your committee frankly confesses it does not yet have a very clear conception of what is embraced in the question; at the same time it appreciates that there does not seem to be any doubt that a higher efficiency may be assured, and less loss experienced by more securely loading

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and packing commodities handled in interline shipments. What might be accomplished in that direction, however, is as yet uncertain.

Due to the short time your committee has had the subject in hand, opportunity has been lacking to secure information of any particular interest. Furthermore, it has not been able to confer with the subcommittee of the American Railway Association on marking, packing and handling of freight, nor with the patron of the suggestion, in conference with whom it is believed a better plan of investigation and course of procedure may be outlined.

It is, therefore, the intention of your committee to go into this matter carefully during the coming year.

A. KEARNEY, Chairman,
L. H. TURNER,
C. N. SWANSON,
J. M. BARROWDALE,
G. H. GILMAN,
A. B. CORINTH,
R. L. KLEINE,

ROANOKE, VA., April 7, 1914. *Committee.*

THE PRESIDENT: You have heard this report, gentlemen. What action do you want to take on it?

MR. CHAMBERS: I move that the report be received and the committee continued.

THE PRESIDENT: The motion is made and seconded that the report be received and the committee continued; is there any discussion? All in favor say "aye"; opposed, "no." The motion is carried.

THE PRESIDENT: Mr. Brazier has a communication which he would like the privilege of putting before the convention. As we are somewhat ahead of our schedule, if there is no objection we will ask Mr. Brazier to read his communication.

(Mr. Brazier here presented a communication regarding the standard box car. For letter in full, see pages 407 to 409.)

THE PRESIDENT: I do not know that this communication of Mr. Brazier's requires any action at this time, but I felt it would be of a great deal of interest to the members to know about the movement that is on foot towards the adoption of a standard box car.

MR. CRAWFORD: I happen to have some knowledge of the subject of this letter from reading the proceedings of the last

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meeting of the American Railway Association, and it is the desire of that association, as expressed in their proceedings, to do all that can be done toward accomplishing what seems to be very desirable, and that is a standard box car. I think we can only take the reading of this letter before us to-day, as a notice to all of us to put forth our best efforts to see what we can do to assist in accomplishing the object of the American Railway Association. Of course, we will all be called on to assist, and this advance notice would help us, each one of us, perhaps, in making up a list of the details we would like to stick to, and the ones which we feel we could sacrifice.

THE PRESIDENT: We have a committee appointed to give a report on Car Construction. That committee report is on the program for to-morrow, and I think we will pass this question without further action at this time, as you may wish to consider it in connection with the report of the Committee on Car Construction to be presented on Friday.

MR. CHAMBERS: Would it be in order to receive this communication and make it part of our minutes?

THE PRESIDENT: I think we had better defer action on it until to-morrow, Mr. Chambers. The matter is called up ahead of the schedule. I thought this a favorable time to have the letter read so that the members could think it over.

The next business will be the report of the Committee on Car Trucks, J. T. Wallis, Penna. R. R., chairman. The report will be presented by Mr. L. C. Ord, a member of the committee.

Mr. Ord presented the report, as follows:

REPORT OF COMMITTEE ON CAR TRUCKS.

To the Members:

The following subjects were assigned by the Executive Committee to the Committee on Car Trucks and were discussed in the report of your Committee to the convention last year (see M. C. B. Proceedings 1913, pages 503 to 507, inclusive), outlining the work to be done during the ensuing year, viz.:

1. Submit limiting dimensions for cast steel truck sides for 80,000, 100,000 and 140,000 pounds capacity cars and revise specifications covering same.

2. Submit design for cast steel truck bolsters for 80,000, 100,000 and 140,000 pounds capacity cars and revise specifications covering same.

3. Spread of side bearings, center to center, on various capacity cars from 60,000 to 100,000 pounds.

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4. Clearance of side bearings.
5. Construction of center plates for standard freight cars.
6. Springs for trucks.
7. Strength of arch bar trucks as compared with cast steel truck sides.

1. Limiting Dimensions for Cast Steel Truck Sides for 80,000, 100,000 and 140,000 Pounds Capacity Cars and Revision of Specifications.

On account of cast steel truck sides being generally covered by letters patent it was decided impracticable to recommend definite designs, but as the Association has directed the committee to submit standard designs of truck bolsters it becomes necessary to adopt limiting dimensions for the truck sides to provide for the application of the standard truck bolsters and interchangeability. The strength of the acceptable cast steel truck sides for the various capacity cars is taken care of by the specifications and tests, which will eliminate those of weaker design, thus establishing a standard for cast steel truck sides without definitely prescribing the design.

LIMITING DIMENSIONS.

The manufacturers of cast steel truck sides were requested to submit drawings of the different truck sides manufactured by them with a view of arriving at the limiting dimensions for truck sides. These have been tabulated (see Exhibit A-1 and A-2) and demonstrates the entire lack of uniformity not only for different roads but cast steel truck sides of the same capacity manufactured for the same road. To establish limiting dimensions your committee was governed by the following:

A. Relation of center line of draft gear to the bearing surface of the body center plate largely established the height of the center plate of the truck bolster from rail. With this as a base the height from top of rail to top of truck bolster (underside of truck center plate) was fixed at 26⅞ inches with empty cars for all capacities.

B. The second step was the establishing of the vertical height from the bearing surface of the truck center plate to the top of spring cap (or underside of bolster resting on spring cap). This was fixed at 8¾ inches for all capacities. This dimension is correlated to the maximum height of side frame from rail which latter was established at 31 inches due to limitations of body car construction.

C. The vertical height from the top of spring cap (or underside of bolster), to top of side frame is made up of the depth of bolster, amount of clearance between top of bolster and underside of top member of side frame and depth of top member, the dimensions of the latter being dependent upon the capacity.

D. By adopting the use of the M. C. B. truck springs "C" for 80,000 pounds capacity, "D" for 100,000 pounds capacity and a five-cluster spring

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made up of coils the same as spring "D," a uniform spring height is maintained for the three capacity trucks and all springs can be built up from the same unit coils. This establishes the height from top of spring plank (or bottom of lower spring cap) to top of rail, or 10½ inches.

E. A minimum distance of 4 inches is necessary as a safe clearance between bottom of side frame and top of rail with new wheels, bearings, etc., leaving 6½ inches as a maximum total for thickness of spring plank and depth of bottom member of side frame, which latter is determined by design and capacity desired.

F. The widths of bolster openings are governed by the capacity and the width of spring base required, which also controls the wheel base.

G. The cross section of the top and bottom members of the truck side is determined from the capacity and governed by allowable stresses for members made of cast steel and controlled by the specifications and tests.

The limiting dimensions shown on Exhibit "B" for the 80,000 pounds, 100,000 pounds and 140,000 pounds cast steel truck sides were established on the foregoing basis and are submitted for your approval.

SPECIFICATIONS AND TESTS.

As outlined in the report of last year the specifications and tests for cast steel truck sides, contained in the M. C. B. Recommended Practice, have been revised to include a proof load test for deflection and permanent set as well as limiting weights; and your committee recommends the following changes and additions in the present Recommended Practice to cover the same.

(M. C. B. Proceedings 1913, page 1129.)

Under Article III, Physical Properties and Tests, after Section 10.

Physical Properties, add new section for Proof Test, as follows:

11. PROOF TEST.—Each truck side shall be tested in a suitable machine to the loads shown in the table for different capacity trucks.

Car Capacity, Pounds.	Initial Load Pounds.	Proof Tests.		
		Load, Pounds.	Maximum Deflection, Inches.	Maximum Set, Inches.
80 000	20 000	110 000	0.15	0.01
100 000	25 000	135 000	0.15	0.01
140 000	35 000	175 000	0.15	0.01

After applying initial load, reduce load to 5000 pounds and set deflection instrument at zero; apply the requisite proof load and measure deflection; reduce load to 5000 pounds and measure the set.

Truck sides may be supported at each end, directly beneath the center line

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corresponding to center line of axle when side frame is in the truck and loaded at center of bolster opening midway between supports, or they may be supported in the center and loaded at the ends. The deflection and set shall be measured at the center line of spring seat.

(Change numbers of sections following new No. 11.)

Under Article IV. Weights. Section 13, Variation in Weights (new number 14), change to read as follows:

PRESENT.

13. VARIATION IN WEIGHTS.—Truck sides shall not vary more than 3 per cent above or 2 per cent below what has been determined as the normal weight of the casting except that in case the casting has met all requirements save that of overweight, it may be accepted at the maximum allowable weight here specified. For the purpose of this requirement the normal weight shall be previously agreed upon between the purchaser and manufacturer.

RECOMMENDED.

14. LIMITING WEIGHTS.—Truck sides shall conform to the weights given in table. In case the castings have met all requirements except that of overweight, they may be accepted at the maximum allowable weight here specified:

Car Capacity, Pounds.	Weights, Pounds.		
	Minimum.	Normal.	Maximum.
80 000.....	*415	*425	*445
100 000.....	490	500	520
140 000.....	645	660	685

*Estimated.

Under Article VII (page 1130), Rejection. Section 16, Rejection (new number 17) change to read as follows:

PRESENT.

16. REJECTION.—In case the test pieces selected do not meet the specifications, all castings from the entire melt shall be rejected.

RECOMMENDED.

17. REJECTION.—In case the test pieces do not meet the specifications, all castings from the entire melt shall be rejected. All castings which fail to meet the requirements of the Proof Test shall be rejected.

GAGES.—Gages have been designed to cover the limiting dimensions of cast steel truck sides with tolerances which each truck side must pass.

EXHIBIT "C."—Gages for cast steel truck sides for 80,000, 100,000 and 140,000 pounds capacity freight cars.

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2. Submit Design for Cast Steel Truck Bolsters for 80,000, 100,000 and 140,000 Pounds Capacity Cars and Revise Specifications Covering Same.

The manufacturers of cast steel bolsters were requested to submit drawings of the different truck bolsters manufactured and your committee has tabulated therefrom the important dimensions (see Exhibits "D-1" and "D-2") from which it will be noted that there is a wide variation in all of these dimensions precluding the possibility of taking as a base any group of bolsters being manufactured at present; hence it was necessary for your committee to develop dimensions jointly for the cast steel truck sides and bolsters keeping within general limiting dimensions for clearances and using the most adaptable sections for cast steel that would give the desired strength with minimum weight represented by the specifications.

CENTER PLATES, REMOVABLE TYPE.

After careful consideration it was decided to design the bolsters for removable center plates. An examination of bolsters in service shows that the center plates cast integral with bolsters are worn oblong in the king pin hole and in numerous cases the outside flange is broken off which condemns the bolster, requiring the annular rings of the old center plate being machined off and application of a new center plate, which raises the height of the truck to an amount equal to the thickness of the new center plate; furthermore, the bearing surface of such center plates is usually very rough which can not be dressed without incurring considerable expense. Making provision in the new bolsters for detachable center plates not only avoids these conditions but simplifies the manufacture and permits the use of a drop forged center plate which is giving very much better service than the cast steel. The slight increase in first cost of the bolster with the removable center plate is more than offset by its advantages.

ADJUSTABLE SIDE BEARINGS.

Your committee in report of last year stated that it was the intention to make provision for adjustable side bearings. The side bearing clearance diminishes more or less on all types of cars with service and it is difficult and expensive to maintain side bearing clearance on cars of steel construction with metal body and truck bolsters unless adjustment is provided for in the design. Accordingly your committee designed the truck bolsters to be equpiped with flat adjustable side bearings. Provision has also been made for the use of roller or other anti-friction side bearings by establishing a uniform slope, ratio of 1 inch in 28 inches, in that portion of the top plate of bolster where these side bearings will be located. Where roller side bearings are used the pockets for the adjustable side bearings are to be omitted.

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EXHIBITS E, F AND G.

Your committee has designed the bolsters accordingly and submit for approval the following:

EXHIBIT "E."—Cast steel truck bolster for 80,000 pounds capacity freight cars.

EXHIBIT "F."—Cast steel truck bolster for 100,000 pounds capacity freight cars.

EXHIBIT "G."—Cast steel truck bolster for 140,000 pounds capacity freight cars.

SPECIFICATIONS AND TESTS.

In report of last year it was stated that the specifications for cast steel truck bolsters will be revised and also include a proof load test for deflection without permanent set, as well as limiting weights, but since your committee is recommending a definite design of truck bolsters for each capacity car, which was based on a large series of tests, it is felt that a proof load test may be omitted. The following changes in the specifications of the present Recommended Practice are submitted for yout approval:

(M. C. B. Proceedings 1913, page 1132.)

Under Article III. Weights. Change Section 13, Weights, to read as follows:

PRESENT.

13. WEIGHTS.—Bolsters shall not vary more than 3 per cent above nor 2 per cent below that which has been determined upon as the normal weight of the casting, except that in case the casting has met all requirements save that of overweight, it may be accepted at the maximum allowable weight here specified. For the purpose of this requirement the normal weight shall be previously agreed upon between the purchaser and the manufacturer.

RECOMMENDED.

13. LIMITING WEIGHTS.—Bolsters shall conform to the weights given in table. In case the castings have met all requirements except that of overweight, they may be accepted at the maximum allowable weight here specified.

Car Capacity, Pounds.	Weights, Pounds.		
	Minimum.	Normal.	Maximum.
80 000.....	*660	*675	*700
100 000.....	735	750	780
140 000.....	*855	*875	*910

*Estimated.

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PRESSED STEEL BOLSTERS, ALTERNATE STANDARD.

As the pressed steel bolsters (built-up type) are in general use your committee deemed it advisable to also present designs for your consideration, which are interchangeable with the cast steel bolsters, and which would provide an alternate standard.

EXHIBIT "H."—Pressed steel truck bolster for 80,000 pounds capacity freight cars.

EXHIBIT "I."—Pressed steel truck bolster for 100,000 pounds capacity freight cars.

EXHIBIT "J."—Pressed steel truck bolster for 140,000 pounds capacity freight cars.

GAGES.

Gages have been designed with tolerance for gaging the bolster as well as to provide for interchangeability.

EXHIBIT "K."—Gages for cast and pressed steel truck bolsters for 80,000 100,000 and 140,000 pounds capacity freight cars.

3. SPREAD OF SIDE BEARINGS, CENTER TO CENTER, ON VARIOUS CAPACITY FREIGHT CARS FROM 60,000 TO 100,000 POUNDS.

On account of the great difference in opinion among the various roads, as illustrated by column headed "U" on Exhibit "D," your committee has not been able to decide on the proper distance for spread of side-bearings on 100,000 pound cars and those of less capacity. In view of the fact that there are comparatively few 140,000 pounds capacity cars in the country, your committee has seen its way clear to recommend a spread of 50 inches, center to center, on cars of this capacity and believe that it would be wise to make the same recommendation in regard to other capacity cars, but desires to have another year to go over the matter thoroughly before making a definite recommendation for the 80,000 and 100,000 pound capacity cars.

4. CLEARANCE OF SIDE BEARINGS.

The clearance of side bearings depends on the spacing or spread of the side bearings. Your committee recommends the following:

SIDE BEARING CLEARANCE FOR NEW CARS.

	Minimum.	Maximum.
Per side bearing.....	$\frac{1}{8}$ inch	$\frac{5}{16}$ inch
Total (one truck).....	$\frac{1}{4}$ inch	$\frac{5}{8}$ inch

5. CONSTRUCTION OF CENTER PLATES FOR STANDARD FREIGHT CARS.

This subject was recommended for review by Mr. W. J. Tollerton, General Mechanical Superintendent, Rock Island Lines, and was touched upon in last

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year's report, in which it was stated that the present standard center plate with 100 square inches bearing area, shown on sheet M. C. B. 20, has been generally adopted with slight modifications on 80,000 and 100,000 pound capacity cars, and we have not heard of any serious objection to the same. The members were requested to communicate to your committee any data showing wherein the present standard center plate has proven unsatisfactory as well as any recommendations they may have to make. Your committee has received no requests for changes and, from their knowledge, the performance of the M. C. B. Standard Center Plate under cars of 80,000, 100,000 and 140,000 pounds capacity has been satisfactory. A change in the over-all height of the center plates as well as the rivet spacing is necessary to make these center plates applicable to cars of steel construction and to the bolsters recommended. It is essential that the center plates be made either steel castings or drop forgings; the latter are preferable as they can be more accurately manufactured and have smoother bearing surfaces, the cost being slightly in favor of the drop forging.

EXHIBIT "L."—Standard truck and body center plates for freight cars of 80,000, 100,000 and 140,000 pounds capacity.

6. SPRINGS FOR TRUCKS.

The cast steel truck side limiting dimensions and the bolsters for the 80,000 100,000 and 140,000 capacity freight cars have been designed to accommodate the springs shown on Sheet M. C. B. "H" of Recommended Practice, as follows:

Spring "C" for cars 80,000 pounds capacity.

Spring "D" for cars of 100,000 pounds capacity.

Five double-coil cluster—made up of coils the same as used in Spring "D" —for cars of 140,000 pounds capacity. See Exhibit "M."

This enables the same design outside and inside coils to be used for all three capacity trucks by varying the combination of number of coils and using the different design of spring caps according to capacity.

Experiments with alloy steel springs are still in progress but not developed to the stage where definite recommendations can be made.

7. STRENGTH OF ARCH BAR TRUCKS AS COMPARED WITH CAST STEEL TRUCK SIDES.

Your committee was requested to prescribe limiting strains per square inch for arch bar trucks with a view to establishing a standard along these lines and reported last year that little would be accomplished in endeavoring to harmonize the different formulae used, but advised that physical tests were being conducted with truck side frames built up of M. C. B. and other designs of arch bars. Tests were also conducted on cast steel truck sides and the results of two of these, which are representative of the Modified M. C. B. Specifications, as well as the results with the arch bar types, were plotted graphically to show comparative center line deflection and permanent set.

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EXHIBIT "N."—Truck Sides.—Comparative tests of cast steel and arch bars.

EXHIBIT "O."—Description of truck side frames tested.

EXHIBIT "P."—Photograph of 100,000 pounds capacity cast steel truck side tested.

These comparative tests show conclusively the decided superiority of cast steel truck sides, conforming to the Modified M. C. B. Specifications, over the arch bar truck sides.

8. GAGES FOR 6 INCH BY 11 INCH JOURNAL BOXES.

Gages for 6 inch by 11 inch journal boxes were adopted as Recommended Practice last year and your committee presents Exhibit "Q" showing the gages. Instructions governing the use of the gages are as follows:

INSTRUCTIONS GOVERNING THE USE OF GAGES FOR 6 INCHES BY 11 INCHES M. C. B. JOURNAL BOX.

GAGE NO. 1—INSIDE GAGE.

Dimension "A" gives minimum dust guard opening and minimum width for front of box. Dimensions "B" and "D" give maximum and minimum width between inside lugs or bearing stops. Dimension "E" gives exact distance between outer edge of lug or bearing stop and wedge stop and allowable variation in this distance is provided for by the slots "H" and "J," which fit over the walls at back of box or dust guard opening, these slots being $\frac{1}{8}$ inch wider than walls, allowing $\frac{1}{16}$ inch play each way, maximum allowance.

GAGE NO. 2—JOURNAL BOX BOLT HOLE GAGE.

Dimension "O" is the exact distance between centers of journal box bolt holes, and dimension "Q" is size of the plugs, being $\frac{1}{16}$ inch smaller than holes in box, thus allowing for a variation of $\frac{1}{8}$ inch. Boxes are not to be accepted if plugs will not enter bolt holes. Boxes not to be accepted if wider than dimen sion "N," or do not have radius "P" to conform to truck frame.

GAGE NO. 3—DUST GUARD GAGE.

The dust guard opening or slot must allow this gage to enter all the way. The dimension "T" is made of such width that the line "M-N" will not be above the bottom of dust guard opening.

GAGE NO. 4—OUTSIDE ALIGNMENT GAGE.

This gage determines the relation between inner and outer center lines of box and is used in conjunction with Gage No. 1. The application being as follows: The plugs "Q" of gage No. 4 are placed in bolt holes and points "M" and "R" extending over back end of box. Gage No. 1 is placed on the inside of box, through the dust guard opening. A normal box will show the point "M" of Gage No. 4 centrally located in slot "L" of Gage No. 1. The distance

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"K" of both gages coincides. The dimension of slot "L" allows for longitudinal variation of 1/8 inch, also points "R" allow for 1/8 inch variation in width at back of box. These points must go over all boxes accepted. The maximum amount, out of alignment, between inside and outside centers of box, is 1/8 in.; that is, the point "M" of Gage No. 4 must not extend on either side of slot "L" of Gage No. 1 by more than this amount.

GAGE NO. 5—BOLT HOLE HINGE LUG GAGE.

This gage is placed on the surface of lid opening and the location of holes in hinge lug must be such as to allow the plug points "X" to enter holes, the necessary variation to be allowed being provided for in the diameters "S" of same.

The Gage Drawings as well as the Instructions Governing the Use of the Gages are to be included in the Recommended Practice of the Association.

9. SAFETY HANGERS FOR BRAKE BEAM.

The Committee on Standards and Recommended Practice referred to the Committee on Freight Car Trucks the following from Mr. A. R. Ayers, General Mechanical Engineer, New York Central Lines: "The matter of falling brake beams on freight cars is a serious one, and we believe is of enough importance to be called to the attention of the M. C. B. Association, with the idea of bringing about some action that will provide for the application of some device for preventing brake beams falling on track due to failure of hangers, preferably by the application of safety straps to the truck spring plank. We would suggest that this matter be called to the attention of the Committee on Standards and Recommended Practice, in order to get something started along this line."

Your committee has given this subject careful thought and their experience with the majority of brake beam safety hangers has been that these devices have been inefficient and a source of expense from a maintenance standpoint. Unless they are designed with a strength at least equal to the loads imposed upon the brake beam hangers and to prevent wear, they will not be efficient when the emergency arises for them to perform their function. Furthermore, with the present lack of interchangeability and the uniformity of design of brake beams and trucks, it would be impracticable to design a standard safety hanger which would be generally applicable. Your committee finds little cause for the employment of brake beam safety hangers where the brake beam hangers and connections are designed and manufactured with proper care and believe that the remedy lies along these lines rather than in the adoption of the auxiliary device of brake beam safety hangers.

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RECAPITULATION.

The following are submitted to be referred to letter ballot for adoption as Recommended Practice of the Association:

1. Limiting dimensions, shown on Exhibit "B," for 80,000, 100,000 and 140,000 pounds capacity cast steel truck sides.

2. Change in present Recommended Practice—"Specifications for Cast Steel Truck Sides."

3. Gages, Exhibit "C," for cast steel truck sides for 80,000, 100,000 and 140,000 pounds capacity cars.

4. Cast steel truck bolster for 80,000 pounds capacity freight cars, Exhibit "E."

5. Cast steel truck bolster for 100,000 pounds capacity freight cars, Exhibit "F."

6. Cast steel truck bolster for 140,000 pounds capacity freight cars, Exhibit "G."

7. Change in present Recommended Practice—Specifications for Cast Steel Truck Bolsters.

8. Pressed steel truck bolster for 80,000 pounds capacity freight cars, Exhibit "H."

9. Pressed steel truck bolster for 100,000 pounds capacity freight cars, Exhibit "I."

10. Pressed steel truck bolster for 140,000 pounds capacity freight cars, Exhibit "J."

11. Gages, Exhibit "K," for cast and pressed steel truck bolsters for 80,000, 100,000 and 140,000 pounds capacity freight cars.

12. Spread of 50 inches, center to center, for side bearings of 140,000 pounds capacity truck bolster.

13. Clearance of Side Bearings for New Cars.

	Minimum.	Maximum.
Per side bearing.....	$\frac{1}{8}$ inch.	$\frac{5}{16}$ inch.
Total (one truck).....	$\frac{1}{4}$ inch.	$\frac{5}{8}$ inch.

14. Five double-coil cluster spring, Exhibit "M," for cars 140,000 pounds capacity.

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15. The following changes in center plates are submitted to be referred to letter ballot for adoption as Standard in lieu of the present standard:

Truck and body center plates for freight cars of 80,000, 100,000 and 140,000 pounds capacity as shown on Exhibit "L."

Gages for 6 in. by 11 in. journal boxes as shown on Exhibit "Q" and Instructions governing the use of these gages to be included in Recommended Practice. This was adopted by letter ballot last year.

Respectfully submitted,

J. T. WALLIS, Chairman,
J. J. TATUM,
E. W. PRATT,
James COLEMAN,
Prof. M. C. SCHMIDT,
L. C. ORD,
J. McMULLEN,
Committee.

In presenting the report, after paragraph 13, page 6, Mr. Ord said: The reason for that change was, where any bolster was submitted, to pass a certain design, it was reasonable to put in a test which would make the design come up to a certain standard. A definite standard was submitted. As long as the specification was complied with, it seemed foolish to double that by calling for a design which should prove to come up to a certain test, as long as it fulfilled conditions.

Since the report was printed, the committee have one or two changes in Sheet B to which they desire to call your attention. In the sketch showing the truck side you will notice that the top bolster bearing area at the side does not come down to the bottom of the bearing area on the bolster, and the changes to be made in the dimension of the top bearing area are from 8⅝ in. to 9⅝ in., which will give the bolster the support of the full length of the bearing area.

There is a change in the little tabulated column under the heading "Side Frame," at the right-hand side of the sheet. Item J contains an error. Instead of the figures for the 70-ton capacity being 14 in., as shown, they should be changed to 13 in.

The committee desire to further consider the brake beam top suspension pin location as shown on the sketch. As at present shown, it is entirely satisfactory and proper for beams with the center suspension, but with maximum wear of shoe and

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tire, it was felt advisable to try to change the location of the hanger, to provide the longest possible hanger, so that the variation of the brake hanger angle would remain as nearly constant throughout the conditions from full shoe and tire to minimum dimensions of shoe and tire, as possible, and also provide the cases where the beam was used on trucks without top suspension, which, with the present location, would make the hanger too short for good service. The design will take care of the center suspension, and make the best practice for that suspension, and will also improve the conditions where the other type of suspension is used.

Yesterday a motion was made regarding the brake beam safety hanger fastened on the brake beam, and in that connection I would say the committee would recommend the dropping of the attachment of the brake beam safety hanger from the brake beam as shown.

There is, however, one other point which occurs in this connection. The Canadian government has seen fit, through its Railway Commission, to make compulsory the brake beam safety hanger, and the Canadian roads, therefore, on Canadian-owned cars, must maintain the brake beam safety hanger. By omitting this from the brake beam, however, it will not alter the situation, but will relieve some roads from the necessity of having the hanger connection on the beam, when they do not use it, and will not prevent the other roads from using the hanger where shown on the design of brake beam and truck side that is recommended.

As to the question of center plate, the matter of clearance was brought up yesterday, and it was not entirely clear to the committee whether the members were talking about lateral clearance or vertical clearance between top and bottom plates. They will answer the question that on the lines shown the vertical clearance between top and bottom center plates was 3-16 in. back and front, and at the sides 7-16 in., while the radial clearances between the intermeshing parts of top and bottom plate are 1-16 in. on radial lines, or ⅛ total on the drawing.

The committee realizes if the center plates are to be interchanged among the various roads, it will be necessary to provide satisfactory limiting gages to insure the interchange of these

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plates, and it is the purpose of the committee to furnish with their report a set of gages for center plates to cover the limiting dimensions of any type that may be used, and the figures shown in the report will merely indicate the general design, while the gages will control the variations which will cover the question raised yesterday as to the amount of clearance which should be allowed for different types of bolsters.

The committee wish further to draw to your attention that they have given you in their report all the information at their disposition with reference to previous practice. Reference to this previous practice will show that it was impossible to make a compromise design of the number of arrangements that were already in service, and what they submit is not a compromise, it is a design submitted by the committee which is the best they could devise for the purpose in hand, and not designed merely with a view of past services only, but to meet future conditions. With all the facts at hand, it should enable you to make a suitable comparison between the practice on any road and that which the committee recommends.

I would also point out that in the report the committee has kept, as far as possible, clear of limiting dimensions in the side frames, particularly in any design which may be applicable to various roads, but in the bolsters have given the question of the clearance and the existing types of bolsters all the consideration that could possibly be given to it.

In submitting the report, the committee is particularly anxious that you should realize that you have all the data necessary to make the comparison. If every road is not prepared to concede something for the common good, it will be an impossibility to get any compromise truck side or bolster which would be satisfactory.

THE PRESIDENT: This report is now open for discussion. It is a very thorough and comprehensive report and is worthy of consideration.

MR. FULLER: Did we not pass the motion yesterday to increase the diametral clearance of center plates from 1/8 in. to 1/4 in.?

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THE PRESIDENT: That matter was referred to the Truck Committee.

MR. FULLER: I make a motion then that the radial clearance on the center plates be increased from 1-16 in. to 1/8 in., or the diametral clearance be changed from 1/8 in. to 1/4 in., increasing the female center plate and not disturbing the diameter of the male center plate.

THE PRESIDENT: In making that motion, do you wish that matter to be submitted to letter ballot? It would not be proper, as I understand it, to adopt it here in open convention.

MR. FULLER: As I understand it, the whole report is submitted to letter ballot.

THE PRESIDENT: Yes, the recommendations in the report.

MR. FULLER: Then I would make a motion that the committee change the radial clearance from 1-16 in. to 1/8 in. or the diametral clearance from 1/8 in. to 1/4 in.

MR. ORD: I would say, in reference to that motion, that the committee was particularly anxious that the Association did not take the figures shown on the center plate as their recommendation for clearances, but merely as indication to serve as maximum dimensions, and their gages would run to that. They realize the amount of clearance shown is not the working surface, and it was the understanding that that would be taken care of with the gage limitations that will run with, and work up to, the possible mean clearances as shown in the figures, and that working dimensions and clearances will be allowed in excess of that, under for one, and over for the other, which would run to what Mr. Fuller desires; in other words, we propose to take care of that same point in a manner which is to be embodied in this report and covered in the gages which will be submitted for your approval.

MR. GOODNOW: As I understand it, this refers only to the 140,000 lb. capacity car. What Mr. Fuller is after is to get it under all cars.

MR. ORD: It is the intention to make gages for all cars, and these gages will take care of the maximum and minimum allowances which are possible. If you had a set of gages and

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they allow a fixed maximum or minimum of, say, ⅛ in. or 1-16 in. radially, you are perfectly safe as long as you have variation enough between the points, but be sure you get nothing in excess of that. You must use some limiting figures, and these figures should be considered as absolute minimums under the gage.

MR. FULLER: I do not know whether the gage will take care of this or not. What I had in mind was to give a greater clearance between the male and female center plates. If these gages show the minimum diameter of the female center plate and the maximum diameter of the male center plate, this will take care of my motion, as what I am advocating is ¼ in. clearance.

MR. ORD: There is a different point of view, which has come into this, which is responsible for these figures being so close. In former practice, with the cast-steel bolsters, larger variations were necessary, but when the drop forging was brought out, on account of being able to work to closer dimensions, the advantage was taken of that to put a limit on a number of these bolsters, to allow for less variation, consistent with the more exacting service which is obtained from them. That is why these figures show as close as they do. They should not have shown as closely as that, for general practice, and that is why the committee wish to point out that these figures were, as you see, maximum dimensions for the male, and minimum for the female under gaging, as the closest you could go to, but that the average railroad would run as much in excess of that as is necessary for successful operation with the particular class of cars which they were using, but the committee felt, with drop forge castings, you could work closer up to a certain figure, and that there was no use in discounting the wear by allowing an excessive slack on those figures.

It also came up, that where bolsters are furnished by one firm and made by another, then the roads on their own designs have difficulty in keeping the matter clear. The committee felt that if the bolsters are to be interchanged over all the country, it can not be accomplished by any other way than by standardizing gages or limiting dimensions, and we think we have given you proper figures on which to base the design of the bolster.

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THE PRESIDENT: The report is still open for discussion. The action, as I understand it, which should be taken on the report, eventually is to accept it and refer to letter ballot, but there are a good many various interesting features covered by the report, and there is ample time for full discussion.

MR. CHAMBERS: I think there is one very important feature in the report in regard to side bearing clearances. I do not think they have allowed enough side bearing clearances. We have had some personal experience with cars derailing in yard movements, steel underframe cars and steel cars, where they had ¼ in. at each point of side bearing clearance, and by changing that to ⅜ in. the derailment would stop. I think that is very important. If you have had any experience with it, and have gone into it, you would realize it. In this case the side bearings were spaced 60 inches.

MR. DEVOY: In presenting the report of the Brake Beam Committee yesterday, the Chair suggested that I should take up at this time the question of the safety hanger attachments. I submitted a line or two from page 10 of the report of the Committee on Car Trucks. It does not seem to me, however, that they have made any definite recommendations as to doing away with the safety hanger attachments. While they have recommended that it is of but little use, there were several members who have called to the attention of the Brake Beam Committee the question of eliminating this attachment for safety hangers. In order that the matter may now be properly taken up, I move that the question of eliminating the safety hanger attachment be submitted to letter ballot. I believe that is the only way in which the matter can be handled. It can not be taken out unless it is submitted to letter ballot. The safety hanger attachment is of no use. As far as our road is concerned, we do not use it, and we notice that the majority of cars passing over our tracks, while they may be equipped with this attachment, no use is made of it, and it is not necessary; therefore, I move that the question of its elimination be submitted to letter ballot.

MR. ORD: At the end of the paper I stated that it was the recommendation of the Committee on Car Trucks that that hold be omitted from the brake beam. This was done in conformity

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with the recommendation that that subject be covered, but it was only referred to the committee at the last meeting, and on which they had not the authority to act before, or it would not be included in their report. It is the intention of the Committee on Trucks to recommend that that hold be omitted from the recommended practice.

MR. DEVOY: If that is true, then I shall withdraw my motion. I simply want the matter put before the members of the Association for letter ballot; if that is included, the motion is unnecessary.

THE PRESIDENT: I so understand it. We will consider the motion as withdrawn, and the committee will act on this matter as they intended to.

MR. C. F. GILES (Louisville & Nashville Ry.): On page 5, under the heading of "Adjustable side bearings," in providing for the application of roller side bearings, it appears that the committee fail to make any provision for taking up the excessive wear which they have in the case of the solid or adjustable side bearing. It is just as important, in my opinion, to provide means for adjusting the wear on roller side bearings as on solid side bearings, and besides that, the tendency at the present time is to apply the roller side bearing to the body bolster rather than to the truck bolster. On our road it is our practice to use the adjustable plate on the truck bolster in connection with the roller bearing on the body bolster.

Mr. Chambers speaks of the committee failing to allow sufficient side bearing clearance. That depends, according to our experience, largely on the type of the car. We have had quite a number of derailments with high side hopper cars, largely due to the high center of gravity, and we found it was impossible to allow as much side bearing on these cars as we did on the ordinary type of cars, with the center of gravity very much lower.

THE PRESIDENT: Do you wish to offer any motion or resolution in regard to the point which you raise as to that matter?

MR. GILES: I would like to have the committee give consideration to the question in making their recommendations for

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side bearing clearances, and making provision for various types of cars, depending on the center of gravity of the car, and also in the use of the adjustable side bearing on the truck bolster, so that the clearance can be adjusted as readily with the roller side bearing as with the solid.

MR. CHAMBERS: In order that you may be entirely clear as to the occurrence in connection with the cars I have particular reference to, I will say that we have had a number of box cars 40 feet in length derail around our yard. These particular cars are 80,000 lb. capacity insulated box cars built for ice traffic. When we got them new, and they were engaged in yard movements, where there were short curves, they gave a lot of trouble in derailing, and also at the ice houses along the line. We looked them over carefully to see what the cause was, and I concluded it was a matter of side-bearing clearance. To test that, we took not only one car, but many cars, and moved them to points in the yard where they would not go around the curve without derailing. We did not do a thing but raise the center plate, and give them ⅜ in. at each point, instead of ¼, which they previously had, and that cured the trouble.

MR. ORD: The question of the adjustment of side bearings was taken care of by the committee as far as it was possible for them to go. Instead of showing on the cast-steel bolster the side bearing bottom location solid it is pocketed, to provide for its adjustment, and still retain it in place, the other side bearing being a patented device, and now being taken care of usually by shinning. On that slope of the bolster the committee have not varied from present practice in that respect, and therefore there is the same ability to make adjustment as under former practice.

In the matter of clearance of side bearing there is one point which it is important to keep in mind. In talking about the side bearing clearance on any car the spread should be considered at the same time. One road will talk about a car with a ⅜-in. side bearing, up close to the center plate, and the next road will talk about a car with a 3-in. side bearing, with a spread out over the rail. If you will look at the condition of the spread of the side bearing, you will see that it is necessary that it should be considered at the same time with the other. As the committee

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recommended a spread of 50 inches, which is less than is used in some cases, it will explain the reason why their dimensions is not quite so large as some of the roads would recommend.

The committee have done some research work in connection particularly with high capacity and stiff cars. The reason the recommendation of a spread in the side bearing shows only on the very heavy capacity cars is that quick elevation on a short turnout, or over a curve, due to the difference in the elevation of the track opposite both bolsters — both bolsters are not in line — they are sufficiently out of line to carry the momentum across the diagonally opposite side, and as the capacity goes up, the car body is stiff, and it has less ability to weave and will not transfer the load, which is the cause of derailment. On the opposite side of the curve there is not sufficient weight on the side bearing to prevent the wheel mounting, and this is what causes the difficulty.

Your committee want more information from the various roads as to the facts of the case with regard to side-bearing clearance, and if you will read over the data, you will find where one road can not run cars with side-bearing clearances. I have in mind one road where at least 140 cars a month have to be jacked up and shinned, cars that have no side-bearing clearance. There are very few roads that are not represented in these cars. What the committee want to do is to get a common standard which will apply to these cars.

MR. HENNESSEY: The question of side-bearing clearances is an interesting one. I had some experiences in that direction about a year ago. Running over our line there were some 500 refrigerator cars. The bodies were built identically alike. The trucks were different. About half of these cars had ⅜ in. side-bearing clearances, and the other half had side-bearing clearances varying from ⅛ in. to ¼ in. We had to take the cars with the excessive side-bearing clearances off a certain division, on account of going around some very short and many reverse curves, so that the tanks loaded with ice clear to the roof started a motion of the car, and actually lifted the wheels off the rails, while the other cars with only ⅛ to ¼ in. clearances running on the same division did not give us any trouble. Four or five months after the same cars which had given us trouble were placed back on

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that same division. The bodies of the cars had limbered up, but no changes were made in the side-bearing clearance, and they were able, on account of being limbered, to take the torsion of these short, reverse curves, and we had no more trouble. I think there is fully as much danger of too much side-bearing clearance as there is of not enough; in fact, I believe the correct car is the one that is carrying its load on its center plates, leaving the side bearings just clear. I would like to ask some of these gentlemen who advocate this extreme side-bearing clearance, to try it on one of their passenger cars, and run it over a road having many curves. You will be very sure not to put it on your President's or General Manager's car.

MR. CHAMBERS: I would like to ask Mr. Hennessey what the spread of the side bearings of the cars were? I will say further the cars I have reference to were 60-in. spread.

MR. HENNESSEY: The spread of the side bearings I refer to was 48 in.

MR. CHAMBERS: That makes quite a difference.

MR. HENNESSEY: It does make a great difference and the chairman of the committee covers that point, that you have to take the spread of the side bearings into consideration with your side-bearing clearance.

THE PRESIDENT: Mr. Ord, I would like to ask if it was the intention of the committee that all of the points mentioned in the report should be referred to letter ballot, or if there were some on which you prefer to have further time to investigate and make a recommendation?

MR. ORD: The items that are summarized on page 11, it was the intention to refer, as shown, to letter ballot, with the addition — the report, as amended, with the corrections I gave, as regarding Exhibit B, the addition of a recommendation as regarding omitting the safety hanger hold in brake beam and the gages for the center plates, which would have to be made up and added to the report, to be included for letter ballot.

MR. HENNESSEY: Mr. Chairman, I move it be referred to letter ballot, as the chairman of the committee has recommended.

Motion seconded.

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THE PRESIDENT: The motion is before you; is there any further discussion?

MR. ORD: Before you put that motion, Mr. President, I would like to make the same appeal that Mr. Kleine did with reference to couplers. There has been no more difficult experiment to try to make than to get a standard design for cast-steel truck sides and bolsters, and yet there is none more important than that. The committee have asked you to try to forget the odd cases where that design may not apply or conform to your present standard, and in view of the cases where it will fit, to give it a trial for that case, and not to make the proposition of shelving a good work for the sake of safeguarding some point, and to ask the members and to ask the manufacturers to come to the committee with their information before the meeting, so that they can have positive information. If you have strong opinions on spreading side bearings, side-bearing clearance, or any other point, such as height of truck, get those recommendations in to the committee, so that they can come prepared to properly consider those points; and if there is a small point you want to take up, approve the principle, if it looks good to you, and take the other details up at the time, it will be fully considered. [Applause.]

THE PRESIDENT: The motion is to accept the report, and refer it to letter ballot, with the corrections we have proposed. All those in favor of that motion, say "aye"; opposed, "no." Carried.

MR. KLEINE: On page 8 of the Truck Committee's report, under the heading "Springs for Trucks," last paragraph, the committee say: "Experiments with alloy steel springs are still in progress but not developed to the stage where definite recommendations can be made." The Committee on Specifications and Tests now have this matter under consideration, in connection with other helical springs, and I would move that that portion be referred to the Committee on Specifications and Tests.

THE PRESIDENT: Is the motion seconded?

MR. PRATT: I second that motion.

THE PRESIDENT: Mr. Ord, I would like to ask if that is agreeable to your committee?

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MR. ORD: Yes, sir.

THE PRESIDENT: Is there any discussion on Mr. Kleine's motion?

If there is no discussion, then all those in favor of referring this subject to the Committee on Specifications and Tests, say "aye"; opposed, "no." Carried.

The next report on the program is that of the Train Lighting and Equipment Committee. Mr. T. R. Cook, I believe, is chairman.

Mr. Cook presented the report, as follows:

REPORT OF COMMITTEE ON TRAIN LIGHTING AND EQUIPMENT.

To the Members:

Your committee has gone over the recommended Standards as incorporated in the Proceedings, and would recommend the following minor changes in the text, referring to the 1912 Recommended Practices:

1. Page 1127, paragraph beginning "Battery boxes with two compartments, etc.," be given a paragraph number, paragraph 18.

2. Paragraph beginning "Battery boxes with four compartments, etc.," be made a part of the preceding paragraph.

3. Paragraph No. 18 be renumbered paragraph No. 19.

4. In the present paragraph No. 18, beginning "The diameter of axle pulleys should preferably be 17 in., etc.," should be made a part of the preceding paragraph.

5. Present paragraph No. 19 be renumbered paragraph No. 20.

6. Paragraph beginning "The electric connector between the dynamo lead, etc.," be given paragraph No. 21.

7. Present paragraph No. 20 be renumbered paragraph No. 22.

8. Present paragraph No. 21 be renumbered paragraph No. 23.

9. Present paragraph No. 22 be renumbered paragraph No. 24.

10. Present paragraph No. 23 be renumbered paragraph No. 25.

11. Present paragraph No. 24 be renumbered paragraph No. 26.

In last year's report your committee recommended designs for standard pulley seats for application of axle pulleys, the designs being incorporated on exhibit showing M. C. B. standard 4¼ by 8 in. and 5 by 9 in. axles. This recommendation was rejected.

Your committee feels that most of the objections were due to the fact that the mechanical men of the railroads did not feel it desirable to oper-

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ate with straight axles or with axles with a straight pulley fit. However, there are a number of railroads which are using straight axles and axles with straight pulley fit, and, as stated by your committee last year, it was felt that a design of axle used on any road should meet the approval of the mechanical men of the road. Your committee's recommendation was with a view of standardizing the size of pulley seats for straight and tapered axles, thus making possible the use of interchangeable bushings, which will materially facilitate the handling of electric-lighted cars.

The extension of axle-lighting devices has demonstrated the necessity for standardizing the size of pulley seats not only from a standpoint of convenience in interchangeability, but from a standpoint of safety to equipment and economy in operation. Your committee is therefore still of the opinion that the Association should approve as Recommended Practice the following:

PULLEY SEATS FOR TAPERED OR STRAIGHT AXLES.

12. The dimensions of axles at the point of pulley fit shall be in accordance with the dimensions shown on Exhibit "B."

In last year's report your committee recommended standard dimensions for the inside of battery boxes. This recommendation was rejected on letter ballot, principally for the reason that the dimensions as given did not conform to the detail dimensions used by the various railroads. It was naturally impossible for the committee to recommend dimensions which would fit all of the standard battery boxes in existence, and it was the endeavor to recommend dimensions which represented the average practice of the roads. The committee feels that the M. C. B. Association should standardize the inside dimension of battery boxes for future construction, and again submits its recommendations to the M. C. B. Association as follows:

13. The inside clear dimension of battery boxes should be as follows:

Depth, front to back, 2 ft. 4 in.

Height in clear, not less than 21½ in.

Length of compartment for two standard double-compartment tanks or equivalent, 22⅝ in.

Length of compartment for four standard double-compartment tanks or equivalent, 3 ft. 9¼ in.

At last year's convention the committee recommended that the battery-box tray be reinforced by safety angle irons or straps. This recommendation was not accepted on letter ballot, due to the fact that a number of the roads were of the opinion that a battery box properly designed for the weight it should carry and properly maintained had a sufficient factor of safety. Your committee feels that the liability of battery trays dropping down on the track is a sufficient hazard to justify the installation of safety irons or angles and again submits its recommendations as follows:

14. That in all battery-box designs, two angle irons or straps shall extend longitudinally under the battery box in such a location that in case

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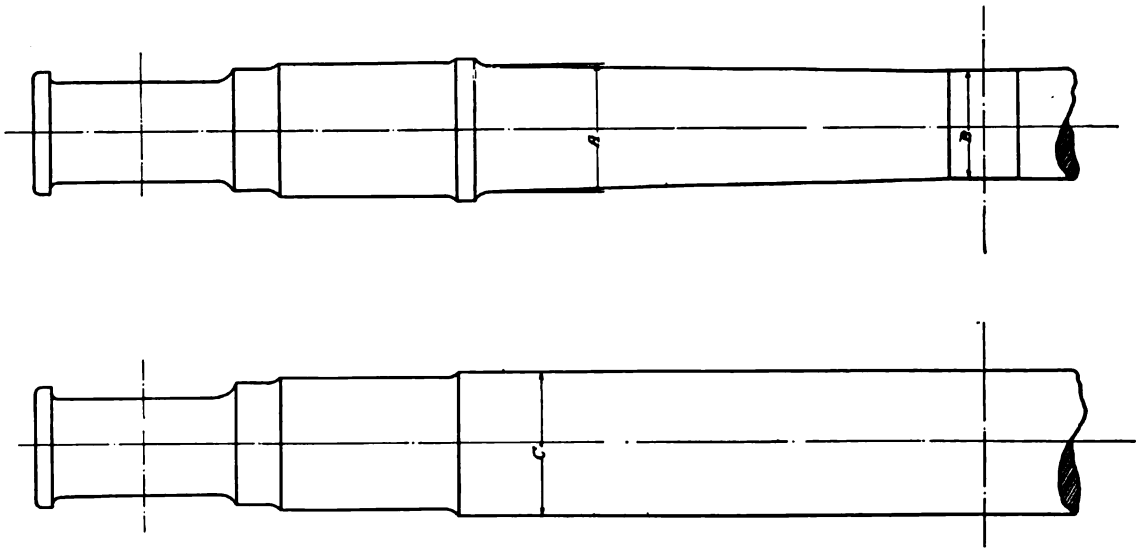

Dynamo Axle Pulley Fits for M.C.B. Axle

Size of Journal	A	B	C
4½"	5⅝"	4⅜"	6⅜"
5"	6⅛"	5⅛"	6⅝"
5½"	6½"	5⅜"	6¾"

EXHIBIT "B"

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of a defective battery-box floor the battery trays will be supported by the said angle irons or straps; the angle irons or straps shall be supported to the car body independent of the battery box proper and shall be of sufficient strength in all parts to safely support the battery in accordance with the weight shown in paragraph 8 and the additional weight of the battery box proper, and the angle irons or straps and the supports for same shall be so installed that they can be readily inspected for corrosion.

On Sheet U-9, Recommended Practice adopted in 1912, is shown a G 18½ bulb with a base longer than the standard base. This was recommended in 1912 on account of the fact that the design of the fixtures in quite a number of car-lighting equipments was such as to require an extra length of base. The majority of roads owning such cars have modified their fixtures so as to accommodate the standard G 18½ bulb, and the committee recommends as follows:

15. The cut of the G 18½ bulb, as shown on Recommended Practice Sheet U-9, be changed in accordance with Exhibit "A."

PULLEY FIT FOR AXLE-GENERATOR SHAFTS AND AXLE-GENERATOR PULLEYS.

Your committee has given considerable attention to the question of standard pulley fit for axle-generator shafts and standard generator pulleys. There are in service at present generator shafts with a variety of pulley fits, and also a large number of different designs of pulleys. These variations are the cause of an unnecessary expense in the maintenance of electric car-lighting apparatus, and with a view to standardizing these fixtures your committee would recommend that it be continued and that it be authorized to confer with a committee of manufacturers of car-lighting devices and a committee of the Association of Railway Electric Engineers, with a view to reaching final conclusions so that designs may be submitted to the Association as a Recommended Practice.

Your committee recommends that Items Nos. 12, 13, 14 and 15 be referred to letter ballot, and suggest that in voting on these questions the members of the Association take into consideration the necessity of adopting for Recommended Practice the items as presented by the committee, and also the fact that it was impossible for the committee to make recommendations which would conform to the existing practice on all railroads, and its recommendations are based on its conclusions after going into the various subjects in detail, both as to the efficiency of the designs proposed and the question of obtaining standard equipment with the least possible change in present practice of the various roads considered.

If recommendations Nos. 12, 13 and 14 are accepted, your committee recommends that they be inserted in the Recommended Practices as follows:

Item No. 12 should follow paragraph No. 22, revised number, as a separate paragraph with a paragraph number.

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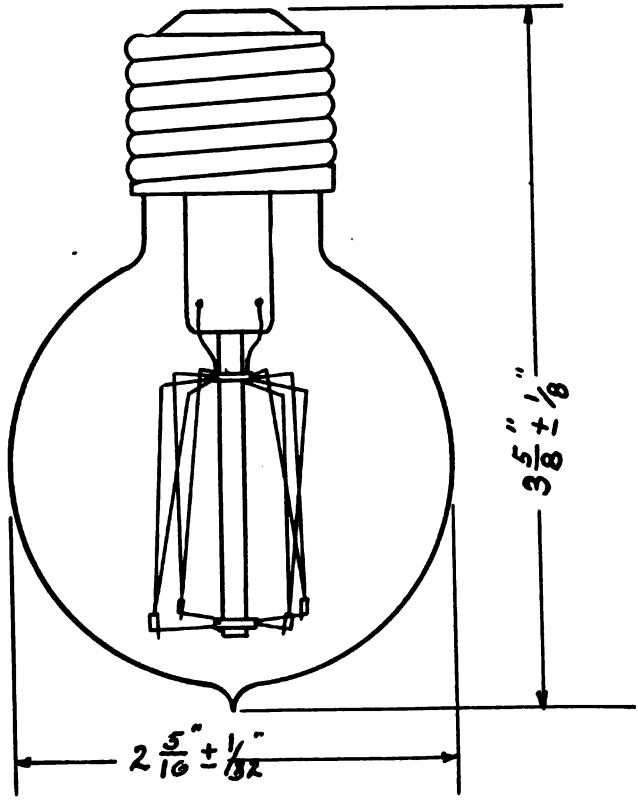

G-18½ CLEAR BULB.
#104 BASE TUNGSTEN FILAMENT.

EXHIBIT A.

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Item No. 13 should follow paragraph No. 18, revised number, under caption of batteries, and should have a separate paragraph number.

T. R. Cook, Chairman,
C. A. Brandt,
Ward Barnum,
D. J. Cartwright,
E. W. Jansen,
J. H. Davis,
C. H. Quinn,
Committee.

At the conclusion of the report, Mr. Cook added:

Mr. T. R. Cook (Penna. Lines): The first eleven items, as I understand it, after the approval of the report, can be taken care of by the Secretary, without any further action on the part of the Association. I desire to emphasize the items Nos. 12 and 13. Item No. 12 covers the standard dimensions for pulley fits on straight axles, or axles with a straight pulley fit. This was turned down on letter ballot last year, I presume due to a number of reasons. First, the mechanical men of some of the railroads do not believe in a straight axle. Second, the question of having two kinds of axles for your equipment. Now those points are all well and good, but there are a number of roads that are using straight axles. There are a number of roads that are using straight axle fits or pulley fits on their axles, and the diameter of the pulley fits vary, which necessitates carrying different sized bushings and is the cause of considerable unnecessary expense. A standard diameter would greatly simplify the maintenance of axle pulleys.

Item No. 13 gives recommended dimensions for battery boxes. On investigation of this subject, your committee found that the battery boxes all over the country varied considerably, the principal difference being the depth of the box. Now the dimensions as given by the committee not only take care of the standard tray as adopted as Recommended Practice, but also for a sufficient addition in depth, to, in the committee's mind, take care of any of the immediate future developments in the battery situation. [Applause.]

The President: The report is before you, gentlemen, and open for discussion. The proper action to be taken on this

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report would be to accept it and refer the committee's recommendations eventually to letter ballot. There is one other point that should be acted upon, and that is their request that they be authorized to confer with a committee of manufacturers, and a committee of the Association of Railway Electrical Engineers, in regard to certain designs. I think it might be well to act upon the last recommendation first.

MR. PRATT: I make a motion that the recommendations of the committee be submitted to letter ballot, and that the committee be authorized to follow their suggestions with regard to conferring with the manufacturers, and so forth.

Motion seconded.

THE PRESIDENT: It has been moved and seconded that the committee's recommendations be submitted to letter ballot, and that they be authorized to confer with the manufacturers and the Electric Light Association, as suggested; any discussion on this subject? All those in favor, say "aye"; opposed, "no." It is carried.

The next report is that of the Committee on Tank Cars. Mr. A. W. Gibbs is chairman.

MR. A. W. GIBBS (Penna. R. R.): When the tank car specifications were drawn in 1903, the tank-car equipment of the country was a very poor one. Practically all the equipment was of poor construction, and the Tank Car Committee had to draw requirements which should not rule out of service the cars that were running; consequently, you have had in the specifications every year, a specification for wooden tank cars. You have also had specifications, taking effect in January, 1903, for tank cars to be built after that date, and these requirements included steel underframes, required certain strength of tank, called for 60-lb. test for the new tanks, but the old ones were allowed to run on 40-lb. test. The application of safety valves has apparently prevented explosions since the date of the first report.

Now the exigency of the service seems to be ruling out the wooden underframe cars in the tank-car equipment, the same as in other classes of cars, and we find a tendency to take the old tanks and put them on steel underframes. Now these tanks, during their life, have been subject to more or less damage, and

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complaints have come in of tanks which have been transferred to the steel underframes and which have cracked and lost their valuable contents; and so the committee felt that there was a limit to the life of cars and of tanks which were in existence at the time these specifications were drawn; and so at a meeting held in January, 1914, which you will see in the middle of the second page, which I will read: "Your committee held a joint meeting January 6, 1914, with the Bureau of Explosives of the American Railway Association, as well as with a number of owners of tank cars. The general question was whether old tanks transferred to new steel underframes should not be put on the same basis as tank cars built after 1903, viz.: required to stand the 60-lb. test pressure? Some of the owners considered that this would be an unnecessary hardship, and proposals were even made to lower the test pressure to 20 lb." The committee thought that any old tanks placed on steel underframes should meet the requirements fixed ten years ago for new tanks. The attention of the committee has been called to very careless testing. The requirements have always been that the tanks should be tested with a cold-water test. We find that many of the tanks have not been tested that way. Some have been tested with warm water, some with air, and some with steam. We feel that the requirements should be insisted upon. One of the crying faults of the tank cars to-day is the bad construction of the discharge valves; there is a great deal of trouble from leakage. The valves are frequently corroded and leaky, and with some designs movement of the tank on the frame results in damage to the valves and loss of contents of tank. The committee has not felt like making a design, but would urge on the owners of the tank cars that the present discharge valve is a pretty poor device, and that this subject receive more attention.

We have had a number of requests to mark light-weighing on the cars. This came up in the original meetings of the Tank Car Committee over ten years ago, and it was objected to by the traffic people, owing to the fact that there were very great differences in the weights of commodities; that marking weights and capacities caused a great deal of contention between shippers and consignees, and so for that reason we have never put the light-weight on the car, although, mechanically, the committee has had

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no objection to it. It is a traffic matter pure and simple, and we have left it to the traffic people.

Now, on the next page, we have given you, in parallel columns, the present form, the changes, and some modifications proposed in the tank-car specifications. For instance, where tanks have been extensively damaged, so as to require new sheets, we require that the tanks shall be retested. We have shortened the period of testing of certain tanks, because certain products are corrosive, and the tanks naturally have shorter life. That is another recommendation. The middle of the fourth page defines more particularly the method of testing. At the bottom of the page is something that will probably cause more comment than anything else: "After January 1, 1918, all tanks in transportation service shall be subjected to the full test requirements of 60 lb. per square inch."

The lower part of page five provides for a definite method of stenciling the record of the test on the body of the tank. It has developed that stenciling on the valve is unsatisfactory, for the reason that inspectors can not see the stenciling from the ground. Therefore, provision has been made for stenciling the full record on the tank, and, also, stamping an abridged record on the valve itself, so that in case of doubt the stamped record on the valve may be compared with the stenciled record on the tank.

With these explanations, it would seem unnecessary to read the report in its entirety.

The report is as follows:

REPORT OF COMMITTEE ON TANK CARS.

To the Members:

During the past year comparatively few questions have been put to your Tank Car Committee, but there are indications of the increasing use of tank cars for purposes never contemplated when the original specifications were drawn. Among products which have been mentioned as liable to be submitted are wines and spirits, as well as certain food products. Some of these, though not dangerous to transport, are of such cost that losses during shipment must be guarded against. Each new product may call for special treatment, but as it stands at present, your committee, not having specific requests, is not prepared to make a more definite statement.

Probably the most important question presented to the committee has been the question of the continued use in transportation service of the old tanks, originally on wooden underframes.

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At the time the Tank Car Specifications were first drawn, in 1903, the greater part of the tank car equipment came in this class. While some action was urgently required at that time to improve the situation, it was necessary for the committee to be as lenient as safety would permit in the treatment of the then existing cars, and, consequently, the specification for tank cars having wooden underframes was drawn with very mild minimum requirements; among them the provision that the tanks should be tested to but 40 lb. pressure, which they must stand without leakage.

At the same time, however, specifications were made for tank cars built subsequent to that date, requiring steel underframes, and tanks designed for a bursting pressure of 240 lb., and a test pressure of 60 lb. per sq. in. Cars built in accordance with this specification are now very largely in use, particularly in handling inflammables.

The exigencies of the service having proved destructive to wooden underframe tank cars, as to other wooden cars, owners in different parts of the country have been ordering steel underframes, to which to transfer the old tanks. Several of these old tanks have involved the railroads in very heavy losses from leakage of contents, due to cracking of the sheets, particularly the heads, probably due to punishment received from the head blocks. Complaints have also been received of a number of very bad tanks developing leakage on the road, requiring immediate transfer of the remaining contents into the first available empty car, which was thus diverted from its legitimate routing.

Your committee held a joint meeting, January 6, 1914, with the Bureau of Explosives of the American Railway Association, as well as with a number of owners of tank cars. The general question was whether old tanks transferred to new steel underframes should not be put on the same basis as tank cars built after 1903, viz., required to stand the 60 lb. test pressure. Some of the owners considered that this would be an unnecessary hardship, and proposals were even made to lower the test pressure to 20 lb. Following the meeting, yard tests were made of an old condemned tank (see Appendix), from which the conclusion was drawn that a tank which would stand 20 lb. water pressure without leaking would withstand the shock acquired in transportation when filled with a liquid of the same viscosity as water. Notwithstanding this, your committee feels that it is unwise to permit the unrestricted transfer of old tanks to steel underframes, especially where they are to carry inflammables, such as the gasolines. Tanks are running which are known to be more than thirty-five years old, and as the Tank Car Specification has been in existence ten years, it would seem that any tank on wooden underframe has already given a reasonable life. Recognizing the fact, however, that many of the tanks originally on wooden underframes may have been well designed and constructed, their use should be allowed if they will stand the test required of tanks built since 1903.

Your committee feels also that there should be a distinction between cars carrying inflammables and those carrying other products not involving the safety question;

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Also, that the interval between the hydraulic tests should be shorter as the age of the tank increases;

That definite provision should be made in the specification for the retirement from transportation service of tanks which can not meet the test requirements.

Another point which has been called to the attention of your committee is that in many cases the pressure tests have not been made by filling the tanks with cold water as prescribed, in some cases air pressure having been used, or hot water, or even steam. The committee does not feel that such tests meet the spirit of the specification, and do not insure the detection of the leaks to the same extent that the cold-water pressure will do.

The attention of your committee has also been called to certain unsatisfactory features in the construction of tanks, such as improper rivet spacing, caulking, etc., but it is hoped that the proper application of the prescribed tests will lead to a correction of these faults, without it being necessary to prescribe the details of construction.

There have been a number of complaints of discharge valves leaking. Your committee feels that there is decided need for improved discharge valves, and better attention to those which are in use. The committee is not prepared to recommend the detailed construction of such valve.

The question of testing frangible lead disks, used in connection with the safety vents, as an alternative to the safety valves on cars carrying non-inflammable products, has been submitted to the committee. After considering the matter, the committee is of the opinion that tests of these disks may be safely excepted from the requirements of periodical test, as the test could only develop the bursting pressure of the particular disk tested, which would then be replaced by a new disk, not tested. In the original tests of these disks, made before the frangible disk type of vent was made an allowable Standard, it was found that the disks burst at very close to the pressure for which they were designed. The committee believes that all that will be necessary will be a certificate from the manufacturer that the disks are of a thickness and material which it has been determined by experiment will rupture at the required pressure.

Your committee has had several requests from the General Managers' Association of the Southeast that tank cars shall be marked with their light weight. The committee has not acted on this recommendation, as it is principally a traffic matter, and the committee feels that the marking of the car with the limit weight, in connection with M. C. B. Rule 86, is ample for safety purposes.

To cover the several points already discussed in this report, your committee recommends the following amendments of the 1913 Specifications for Tank Cars:

That a new paragraph be added under General Requirements (page 2), as follows:

"(d) Tanks which do not meet the prescribed tests shall be withdrawn from transportation service."

That Section 5, Test of Specifications for Ordinary Tank Cars, be

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amended to read as follows, the present wording being given for comparison:

RECOMMENDED.	PRESENT.
Tanks must be carefully inspected and tested before being put into service, and again at intervals of not over ten years, and after that at intervals of not over five years; with the exception that where tanks are used for carrying corrosive products, deterioration is to be expected in a shorter time, and the first test period shall then be reduced to five years. Tanks requiring this five-year test shall be those used for carrying chemicals, such as acids, ammonia liquors, and such other products as hereafter may be specified.	Tanks must be carefully inspected and tested with cold-water pressure at least once in ten years; with the exception that where tanks are used for carrying corrosive products, deterioration is to be expected in a shorter time, and the test period shall be reduced to five years. Products requiring this five-year period should include chemicals, such as acids, ammonia liquors, and such other products as hereafter may be specified.
Provided, that any tank damaged to the extent of requiring renewal of sheet, or extensive reriveting or recaulking of seams, shall be retested before being returned to service.	
All tests shall be made by completely filling the tank with water of a temperature which shall not exceed 70 deg. F. during test. The prescribed pressure must be held for not less than ten minutes after the tank has been caulked tight, and may be applied in any suitable manner.	
The tests for tanks built prior to 1903 shall be at 40 lb. per sq. in., and for tanks built since that date at 60 lb. per sq. in., which they must stand without leak or evidence of distress.	The tests for tanks built prior to 1903 shall be at 40 lb. per sq. in., and for tanks built since that date at 60 lb. per sq in., cold-water pressure, which they must stand without leak or evidence of distress.
After January 1, 1915, all tanks tested to less than 60 lb. pressure shall be stenciled "Not to be used for liquids requiring the inflammable placards under the I. C. C. regulations."	

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After January 1, 1918, all tanks in transportation service shall be subjected to the full test requirements of 60 lb. per sq. in.

Tanks when tested must be stenciled with the date, pressure at which tested, place where test was made, and by whom, as follows:
Tested (date) .....
Pressure (lb. per sq. in.).....
At (place) .....
By (name of firm).....

The tank-car owner shall be responsible for the proper carrying out of all inspections and tests and stenciling, and for the certification of the tests to the Bureau for the Safe Transportation of Explosives and Other Dangerous Articles (see Section 8).

Tanks when tested must be stenciled with the date and place where test was made, and by whom, as follows:
Tested (date) .....
Pressure (lbs. per sq. in.).....
At (place) .....
By (name of firm).....

The tank-car owner shall be responsible for the proper carrying out of all tests and inspections.

That Section 7, Test of Safety Valves, Specifications for Ordinary Tank Cars, be amended to read as follows, the present wording being given for comparison:

RECOMMENDED.

Safety valves must be tested and adjusted if necessary (a) on new cars, before the cars are put into service; (b) on existing cars, by January 1, 1916; and thereafter on all cars at intervals of not over two years.

When valves are tested, the date, pressure to which tested, place where test was made, and by whom, must be stenciled on the body of the tank, near the end and adjacent to the stenciling for test of tank, as follows:
Tested (date) .....
Pressure (lb. per sq. in.).....
At (place) .....
By (name of firm).....

In addition to stenciling on body of car, there shall be stamped on body of valve, in ¼ or ⅜ in. fig-

PRESENT.

All safety valves must be tested, and adjusted if necessary, by January 1, 1915, and at intervals of not over two years thereafter,

and the date of last test and pressure at which valve is set shall be plainly stenciled on the body of the valve, as follows:

Tested (date) .....
Pressure (lbs. per sq. in.).....
At (place) .....
By (name of firm).....

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ures, the date of test and pounds pressure to which valve was tested. Date of test on tank and last date on valve must correspond.

The test may be made without the removal of the valve from the car, provided the valve unseats at a total pressure corresponding with the area of the seat multiplied by the required pressure.

Valves improperly set, or not tested and stenciled at proper intervals, shall constitute defects for which the owner shall be responsible.

The tank-car owner shall be responsible for certification of tests to the Bureau for the Safe Transportation of Explosives and Other Dangerous Articles (see Section 8).

The test may be made without the removal of the valve from the car, provided the valve unseats at a total pressure corresponding with the area of the seat multiplied by the required pressure.

Valves improperly set, or not tested and stenciled at proper intervals, shall constitute defects for which the owner shall be responsible.

That a new paragraph be added following Section 7, as follows, the remaining sections to be renumbered accordingly:

"8. Certification of Tests. Certificates of all tests of tanks and their safety valves shall be sent to the Bureau for the Safe Transportation of Explosives and Other Dangerous Articles, in such form as may be prescribed by the Bureau."

Respectfully submitted,

A. W. GIBBS, Chairman,
C. E. CHAMBERS,
J. W. FOGG,
THOS. BEAGHEN, JR.,
WM. SCHLAFGE,
C. A. SHOEMAKER,
Committee.

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APPENDIX TO REPORT OF TANK CAR COMMITTEE, M. C. B. A., MAY 5, 1914.

TEST DEPARTMENT.

ALTOONA, PA., February 3, 1914.

TANK-CAR TESTS.

Mr. J. T. Wallis, General Superintendent Motive Power:

This test was made in accordance with your letter of the 12th ult., desk 1, and as outlined in Mr. Gibbs' letter of the 10th ult.

DESCRIPTION.

2. The tank car tested is owned by the St. Louis Oil Company and was sent to the Penna. Tank Car Company for a new tank, the old tank having been condemned. The principal dimensions of the tank are shown on Sheet No. 8514 and was originally on a wooden underframe, but in May, 1913, it was equipped with a steel underframe.

3. At that time, we are informed by the Penna. Tank Car Company, the tank was tested to a pressure of 40 lb. per sq. in. and no leaks developed. After the tank was put into service it developed leaks and was condemned. The inside of the tank was free from scale and no trace of leaks could be found except at the rivet in the dome, as shown on Sheet No. 8514. This rivet was caulked before these tests were made.

METHOD.

4. Three holes were drilled and tapped in the one end of the tank, as shown on Sheet No. 8514, and an indicator with a clock escapement was connected to the bottom hole for tests Nos. 1 to 7, inclusive, and to the top hole for tests Nos. 9 to 17, inclusive. An eight-lb. spring was used in the indicator on all the tests.

5. The tank was filled with water to within 18 in. of the top of the barrel, or 44 in. from the top of the dome. The tank was shifted at speeds varying from 8 to 14 miles per hour and kicked into other cars standing in the yards.

6. A couple of tests were made with the locomotive pulling the tank around the yard and giving it light shocks such as it would receive when being cut out of a train.

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RESULTS.

7. The following table shows the results of these tests:

Test Number.	Max. Pressure, Lb.	Inches Indicator was Above Bottom of Tank.	
1	2¼	12¼	Tank hauled around yard and not receiving severe shocks.
5	9¼	12¼	Kicked into cars on siding.
6	9¾	12¼	Kicked into cars on siding.
7	10	12¼	Kicked into cars on siding.
8	8¾	12¼	Kicked into cars on siding.
9	5	36¾	Kicked into cars on siding.
10	5½	36¾	Kicked into cars on siding.
11	8¾	36¾	Kicked into cars on siding.
12	11¼	36¾	Kicked into cars on siding.
13	6½	36¾	Kicked into cars on siding.
14	1¼	36¾	Tank hauled around yard and not receiving severe shocks.
15	8½	36¾	Kicked into cars on siding.
17	8¾	36¾	Kicked into cars on siding.

8. From this table it is seen that the highest pressure with the indicator 12¼ in. from bottom of tank was 10 lb. The minimum pressure was 8¾ lb., and the pressure due to hauling and light shocks 2¼ lb.

9. With the indicator 36¾ in. from the bottom of the tank, the highest pressure obtained was 11¼ lb.; lowest, 5 lb., and 1¼ lb. in hauling and receiving light shocks. This variation in pressure was due to the variation in speeds and to the direction the water was flowing at the instant of shock.

10. Sheet No. 8515 shows typical indicator cards taken during these tests, and from this sheet it will be seen that the water in tests Nos. 7 and 8 was surging toward the opposite end from the indicators when the tank received its shock, thus causing the pressure to be less than it should have been, and the surging of the water while running in test No. 7 shows a surging equal to ½ lb. pressure over standing. During test No. 7 the front journal boxes were broken on the left side of both trucks, and in test No. 17 the coupler broke. The car was then placed in the shop and filled with water and 25 lb. air pressure applied without causing any leaks.

CONCLUSIONS.

11. From these results it can be concluded that a tank which will stand 20 lb. water pressure without leaking will withstand the shock acquired in transportation when filled with a liquid of the same viscosity as water.

(Signed) C. D. YOUNG,
Engineer of Tests.

Test Department, Altoona, Pa., February 3, 1914.

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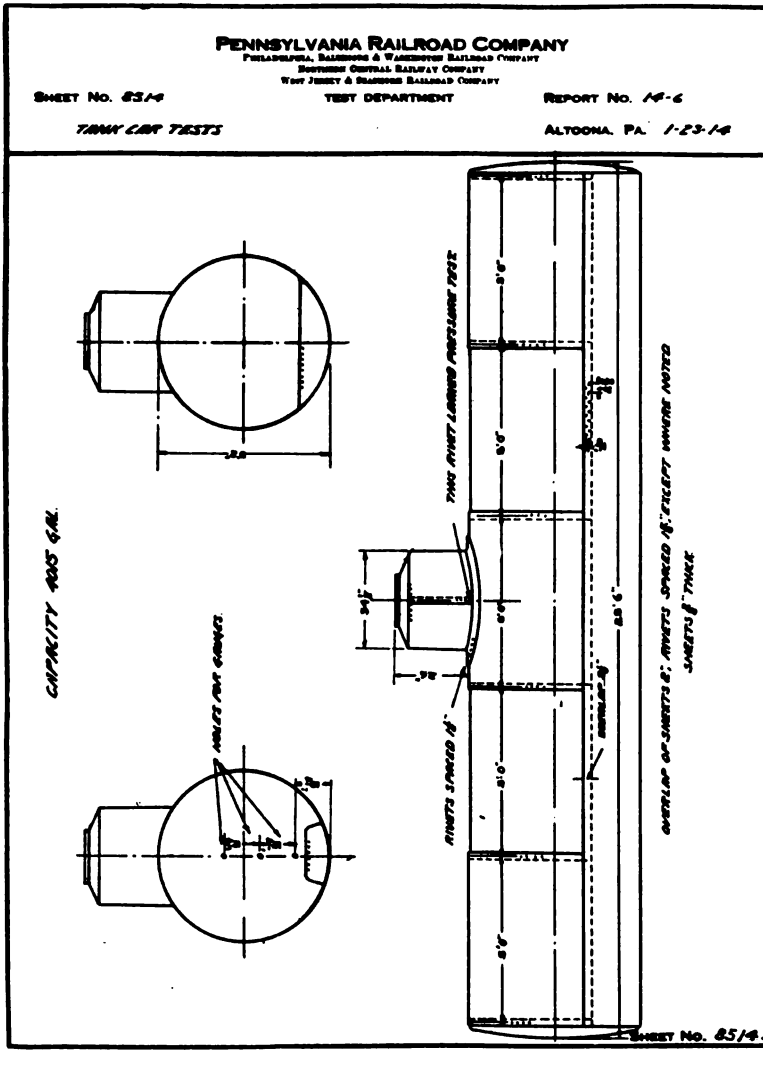

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M. P. 476 D

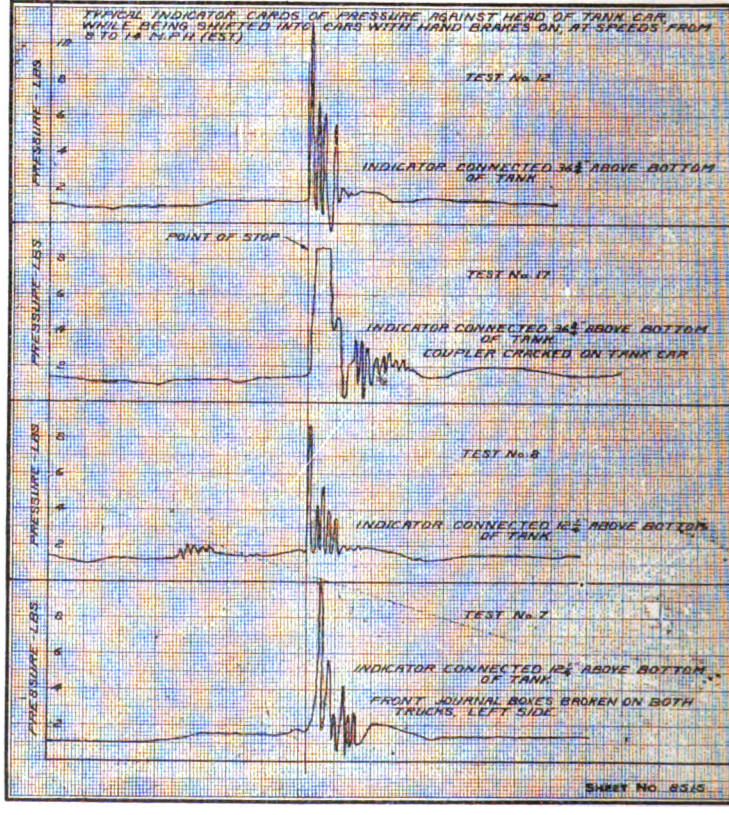
PENNSYLVANIA RAILROAD COMPANY

PHILADELPHIA, BALTIMORE & WASHINGTON RAILROAD COMPANY
NORTHERN CENTRAL RAILWAY COMPANY
WEST JERSEY & SEASHORE RAILROAD COMPANY

SHEET NO. 8515. TEST DEPARTMENT REPORT NO. 14-6

TANK CAR TESTS. ALTOONA, PA. 1-23-14

TYPICAL INDICATOR CARDS OF PRESSURE AGAINST HEAD OF TANK CAR WHILE BEING SHIFTED INTO CARS WITH HAND BRAKES ON, AT SPEEDS FROM 9 TO 14 M.P.H. (EST.)


PRESSURE LBS.
TEST No. 12
INDICATOR CONNECTED 34" ABOVE BOTTOM OF TANK
POINT OF STOP
TEST No. 17
INDICATOR CONNECTED 34" ABOVE BOTTOM OF TANK
COUPLER CRACKED ON TANK CAR
TEST No. 8
INDICATOR CONNECTED 12½" ABOVE BOTTOM OF TANK
TEST No. 7
INDICATOR CONNECTED 12½" ABOVE BOTTOM OF TANK
FRONT JOURNAL BOXES BROKEN ON BOTH TRUCKS, LEFT SIDE

SHEET NO. 8515

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THE PRESIDENT: The report on tank cars is open for discussion.

MR. SMITH: I would like to ask the chairman of the Tank Car Committee if the question of light-weighing and stenciling the light weight on the tank cars has not recently been taken up with him, or some member of the committee?

MR. A. W. GIBBS (Penna. R. R.): In answer to Mr. Smith, I would say that I received a letter from Mr. Curran, President of the New Orleans & Northeastern Road. The General Managers' Association of the Southeast has been urging for several years that the light weight be given on tank cars. The last time the question was up it was referred to the Classification Committee by the American Railway Association, and it is my understanding that they declined to recommend the light-weighing. Mechanically, I do not see any objection to it.

But for the traffic department objections, light-weighing would have been one of the requirements of the original specification. Possibly Mr. Felton of the Union Tank Line may be present. If he is, he can explain this better than I can. I request that Mr. Felton be called.

THE PRESIDENT: Mr. Felton, we would be glad to have you answer this inquiry.

MR. H. E. FELTON (Union Tank Line): My understanding is that as the commodity is transported at an estimated, or more properly speaking, an actual average weight per gallon, that the question of transportation under that rule, that is the assessment of freight charges, might be seriously interfered with, and also the question of marketing, if the tare and capacity weights were stenciled on the tank. I think that is the objection of the Traffic Department of Mr. Gibbs' road, and also of other roads. That is also the objection of the shipper.

MR. SMITH: Mr. Chairman, it is stated in the correspondence with the General Managers' Association of the Southeast, that the objection on the part of traffic officials to the stenciling of the light weight on tank cars has been greatly exaggerated, and that there is no real objection from that source. I would move that the chairman of the Tank Car Committee take that

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feature of the matter up with the proper committee, or officer of the American Railway Association, and get the question thoroughly and finally threshed out, so it will not come up again.

MR. GIBBS: I think the members of the General Managers' Association of the Southeast are members of the American Railway Association. It seems to me that the proper course is for them to take the question up directly with the American Railway Association, and it will then be referred to the proper committee.

THE SECRETARY: Mr. President, I think it was in 1907 that the master car builder of the Union Tank Car Company presented the report of the Tank Car Committee, at the request of Mr. Gibbs, and in his presentation he gave the reasons in this matter that has now been raised, and gave them very clearly. I think if you refer to the report of the 1907 meeting, when the Tank Car Committee reported, you will find there a very clear explanation of it, and it was on the lines suggested by Mr. Felton.

THE PRESIDENT: Mr. Smith, is Mr. Gibbs' suggestion satisfactory, or do you wish to make a motion on the subject?

MR. SMITH: I believe the officers of the General Managers' Association of the Southeast understand that thoroughly, and in the correspondence there was a reference to the Proceedings of 1907. The question is up and I consider it ought to be settled one way or other. I think of no better way than to have the chairman of the Tank Car Committee get in touch with someone that can get the question in line for final settlement. It is immaterial to me how it is settled; I am making this suggestion merely in the hope of getting the question out of the way.

MR. GIBBS: Mr. Smith, can not the General Managers' Association take that up with the American Railway Association?

MR. SMITH: I should think so. I do not know why it has not been done.

MR. GIBBS: They are all members.

MR. SMITH: But there must be some good reason. The chairman of that association is in close touch with the American Railway Association, and I thought that probably the chairman of the Tank Car Committee could straighten the matter out better than anyone else.

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MR. GIBBS: I will merely say that the chairman has never had any objection personally to light-weighing the cars, and the members of the committee have never, per se, objected, and it would have been a rule long ago, but when it came up, every time it was flagged by some traffic member or some traffic association. I think the report of 1903 or 1904 would certainly have had that recommendation but for that reason.

MR. SMITH: Mr. Chairman, if there is nothing to be accomplished by my motion, I will be very glad to withdraw it.

THE PRESIDENT: It looks as if the Southeastern General Managers' Association expected that the Master Car Builders' Association would handle the matter of marking the light weights on the cars, and that is why they have taken it up with this Association; but this Association, evidently is not in position to take the initial action on the question. It is simply our place to carry out the policy and the instructions of the American Railway Association in this matter of light-weighing. I do not know that there would be any objection to the committee's investigating the subject, but I think Mr. Gibbs' suggestion would take care of it. It may be well for the Secretary to advise the General Managers' Association of the discussion here, and that that was the consensus of opinion. If there is no objection, we will let the matter rest that way.

MR. SMITH: That is entirely agreeable.

MR. GIBBS: I know that the members of the Tank Car Committee have no objection to it, and I would be very glad to see it handled that way. We can get the Tank Car Committee of the American Railway Association, and if they care to take any action the Tank Car Committee can at any time be called to meet.

THE PRESIDENT: We will instruct the Secretary to communicate with the General Managers' Association who raised this question, and if there is any further action necessary for the Tank Car Committee, he can so advise them. The Tank Car Committee made certain recommendations in this report which should be referred to letter ballot. A motion to that effect will be in order.

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MR. HENNESSEY: Mr. President, I move that the committee's report be received and referred to letter ballot.

Motion seconded.

THE PRESIDENT: Is there any further discussion on this motion to receive the report and refer it to letter ballot? If not, all those in favor say "aye"; opposed, "no." Carried.

I wish to again call attention of the members of the Executive Committee and of the Arbitration Committee to the fact that we wish to have a short meeting immediately.

If there is no objection, the meeting will now stand adjourned. as the schedule is finished for the day.

Adjourned.

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FOURTH SESSION.

FRIDAY, JUNE 12, 1914.

President Barnum called the meeting to order at 9:45 o'clock A.M.

THE PRESIDENT: The Secretary has some announcements to make before the regular program is started.

THE SECRETARY: I have the report of the Committee on Correspondence and Resolutions, as follows:

REPORT OF THE COMMITTEE ON CORRESPONDENCE AND RESOLUTIONS.

To the Members:

Your committee recommends that the sincere thanks of the Master Car Builders' Association be extended to President Barnum for his well-chosen and excellent address and for his splendid conduct of the affairs of the Association during the year and during the sessions of the convention just closing.

To the officers of the Association generally, for their good work in connection with the conduct of the affairs of the convention and their forethought for the convenience and comfort of those in attendance.

To the various committees, for their careful preparation and presentation of reports.

To the Committee on Arrangements, for its painstaking service in making the very complete arrangements for the meeting of the convention.

To the railroads, for their many courtesies extended and for the exhibits they have made.

To the hotel men of Atlantic City, for their hospitality.

To the Railway Supply Manufacturers' Association, for the complete, instructive and attractive exhibit of railway appliances.

To the technical press generally, and to the *Railway Age Gazette* in particular, for the daily report of all features of the convention.

Respectfully submitted,

JOHN H. PILCHER,
J. F. DEVOY,
LEWIS C. ORD,
Committee.

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(Vice-President Crawford in the chair.)

CHAIRMAN CRAWFORD: What action do you take on this report of the Committee on Correspondence and Resolutions?

THE SECRETARY: I move that it be accepted and approved. Seconded.

CHAIRMAN CRAWFORD: Gentlemen, you have heard the motion; all in favor please say "aye"; contrary, "no." The motion is carried.

PRESIDENT BARNUM: Gentlemen, I want to thank you for approving the resolutions.

THE SECRETARY: I have the report of the Auditing Committee which is as follows:

REPORT OF AUDITING COMMITTEE.

To the Members of the Master Car Builders' Association:

Your Auditing Committee beg to report that they have examined the Treasurer's accounts and find that they agree with his statement as submitted; also have scrutinized the report of Barrow, Wade, Guthrie & Company, certified public accountants, covering their audit of the Secretary's cash books, vouchers, disbursements and bank account, which they certify to as correct, and it is the recommendation of your committee that the same be accepted.

Respectfully submitted,

T. J. BURNS, Chairman,
E. W. PRATT,
F. H. CLARK.
Committee.

(President Barnum in the chair.)

MR. HENNESSEY: I move that the report of the Auditing Committee be accepted.

Motion seconded and approved.

THE SECRETARY: I have the following telegram:

ST. LOUIS, MO., June 11, 1914.

We will be very glad to see the Master Mechanics' and Master Car Builders' and Railway Supply Men's joint convention at San Francisco next year.

E. J. PEARSON,
First Vice-President, Missouri Pacific Railway.

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THE PRESIDENT: I do not understand, gentlemen, that there is any occasion at this time for taking action on the communication, but we want to put it before you so that the matter can be under consideration at the time when action will be necessary later on.

THE SECRETARY: I would like to call the attention of the members who expect to remain here during the Master Mechanics' convention next week to the arrangements that are being made toward the running of special trains to New York and Chicago. If enough members make reservations in advance, both special trains will be run. The reservations should be made at once, in order that the Transportation Committee may know whether there will be enough members who will avail themselves of this special accommodation to justify the running of the trains.

Reservations should be made at the Bureau of Information, adjoining the Registration Booth at the entrance to the pier, or to Mr. George H. Porter, Chairman Transportation Committee. Trains will leave here over the Pennsylvania Railroad and Philadelphia and Reading Railroad at 3:30 P.M., arriving in New York at 6:35 P.M. Wednesday, June 17.

The Chicago train will leave over the Pennsylvania Railroad at 2 o'clock P.M. Wednesday, arriving in Chicago 5 o'clock Thursday afternoon. Transportation can be secured at the Information Bureau at any time. I would ask the members who expect to remain next week and who will avail themselves of this opportunity to notify Information Bureau as promptly as possible, so that they will know whether to make arrangements to send out the special train.

At the convention last year the Arbitration Committee, under Rule 17, made the following recommendation:

"The Committee concurs in the suggestion of Mr. Schultz, that a pamphlet be issued by the Committee on Standards, showing brake beams which meet M. C. B. requirements, these brake beams to be applied on all new cars built after September 1, 1914."

I have here a letter addressed to the Executive Committee, by Prof. C. H. Benjamin, the chairman of the Committee on Brake Shoe and Brake Beam Equipment, in which he gives the

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names of several brake beams which meet the M. C. B. specifications. The list is not complete, and your Executive Committee rather hesitates to send it out in this condition, but would ask the members of the Association if they will test the various brake beams, and in case of those which meet the specifications, that they will notify the Secretary's office so that they can be included in the list that will be sent out a little later.

Gentlemen, this being the day for election of officers, the President has appointed the following tellers: Three tellers to receive and report the ballots cast for officers and count and announce the result:

A. LaMar (Penna. Lines West).
A. E. Calkins (N. Y. C.)
J. S. Sheafe (B. & O.)

Two tellers to count and announce the votes for Executive Committee:

J. A. Pilcher (N. & W.).
L. C. Ord (Can. Pac.).

Two tellers to count and announce the votes for Committee on Nominations:

W. E. Dunham (C. & N. W.).
H. H. Harvey (C. B. & Q.).

Two tellers to count and announce the votes for Associate and Life Members:

T. J. Burns (M. C.).
W. O. Moody (I. C.).

The ballots will be distributed in a few moments, and you will find posted in the rear of the hall the placard containing the names proposed for the Committee on Nominations and also Associate and Life Members. There are to be five members elected on the Committee on Nominations.

D. F. Crawford (Penna. Lines): In the report of the Arbitration Committee which was passed on yesterday, two modifications are desirable, and I would like to present them to you, with the suggestion that if there is no objection on the part of the convention that the Executive Committee make these changes under the emergency clause in the constitution which permits them to take such action.

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One is under Rule 3, paragraph (c), which reads: "Cars built after October 1, 1914, with journals or journal bearings other than M. C. B. standard, will not be accepted in interchange."

It has been deemed wise to make the date October 1, 1915. The time between now and October of this year is very short to make any arrangements of any kind, and it would therefore seem desirable to make the date October 1, 1915. The other matter is under Rule 3, paragraph (g), which now reads as follows:

"After October 1, 1915, no car built for the purpose of carrying products which require the use of salt with ice for the refrigeration of such products will be accepted in interchange unless equipped with suitable device for retaining the brine between icing stations."

An error was made in writing this rule, and it is desirable to use the wording of the old rule, as it stands in the present book, which would be to make the clause read as follows:

After October 1, 1915, "no car carrying products which require the use of salt," etc., the words "built for the purpose of" being omitted.

THE PRESIDENT: Are there any objections to allowing the Executive Committee to make these corrections in the report of the Committee on Arbitration? If not, the proposition as presented by Mr. Crawford will stand approved, and the corrections will be made under the authority of the Executive Committee.

The first report on the program this morning is that of the Committee on Damage to Freight Car Equipment by Unloading Machines, Mr. P. F. Smith, Jr. (Penna. Lines), chairman.

Mr. Smith presented the report, as follows:

REPORT OF COMMITTEE ON DAMAGE TO FREIGHT CAR EQUIPMENT BY UNLOADING MACHINES.

To the Members:

Your committee instructed to continue the work of last year's committee on this subject, find that much interest has been taken in the recommendations made last year; by railroads owning machines, by industrial plants and by all manufacturers of car dumping machinery.

Much has been accomplished in reducing the damage to freight cars by those applying the blocking to their movable platen type machines in accordance with typical design submitted to the 1913 convention, and adopted as recommended practice.

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A member of your committee called on the manufacturers of the machines of the solid floor type and suggested that they give some consideration to modifying their hydraulic clamping arrangement to eliminate the damage to cars. It was found that after receipt of the 1913 report they had done some preliminary work along the line suggested and would be prepared to submit drawings and estimates of changes in existing machines of the solid floor type, and further that no more machines of that type would be built and that future machines would be of the movable platen type.

It was also found that the steel manufacturers and industrial plants are taking a keen interest in the matter and had a committee of thoroughly competent members going over the individual machines, and were having blocking applied as per our recommended practice to movable platen type machines and corrections made to those of the solid floor type.

There are a number of new car dumping machines being installed this year with cradles of increased length to accommodate the larger cars, and after this year's experience with them is analyzed some modification in our recommended practice may be necessary for these machines.

For existing machines we have no modifications of our report of 1913 to recommend, but would impress on all the need of properly spotting cars in cradle, the importance of maintaining blocking by renewing face, the absolute necessity of maintaining extension clamps at all times and to properly supervise machines at industrial plants to insure their carrying out the recommendations of this association.

Respectfully submitted,

P. F. SMITH, JR., Chairman,
J. J. TATUM,
I. S. DOWNING,
J. J. BIRCH,
P. J. O'DEA,
J. H. MILTON,

Committee.

In connection with the report, Mr. Smith said: There has been no change, as stated in our report, in our recommendations, and it is entirely a matter of following up by each and every one of us of the machines located on our lines, and we, as a committee, would recommend that the committee be discontinued, because with the information furnished last year any change in the machine or any change in the car equipment can be taken care of by following out the points stated in last year's report.

THE PRESIDENT: Now, gentlemen, you have heard the report; it is open for discussion. After discussion is completed, a motion to approve the report, with the recommendation that the committee be discharged, will be in order.

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MR. QUAYLE: I move that the report be received and the committee discontinued.

THE PRESIDENT: Is there any discussion on this motion, which has been seconded? If not, all in favor say "aye"; opposed, "no." The motion is carried.

The next business is the report of the Committee on Specifications and Tests for Materials, C. D. Young (Penna. R. R.), chairman.

Mr. Young presented the report, as follows:

REPORT OF COMMITTEE ON SPECIFICATIONS AND TESTS FOR MATERIALS.

To the Members:

Your committee was instructed to revise certain specifications of the Association and prepare new ones covering certain other classes of material covered in the recommendations of last year's committee on form.

Specifications covering sixteen (16) different classes of material were sent out for criticism by the members and, as a result of these criticisms and subsequent meetings, it was agreed that the following named materials only could be handled this year:

Air-brake hose,
Heat-treated knuckle pivot pins,
Steel axles,
Refined wrought-iron bars,
Welded pipe,
Helical springs,
Chain,
Journal-box brasses;

and that the specifications covering the following materials could be further investigated and specifications offered at the next annual meeting:

Refrigerator car heat-insulation materials,
Mild-steel bars for miscellaneous parts,
Steel castings,
Rivet steel and rivets,
Structural steel and steel plates,
Galvanized sheets,
Malleable-iron castings,
Elliptic springs.

Your committee has been in correspondence with the Association of Rubber Goods Manufacturers during this year and are coöperating with them in order to establish standard methods of making tests and standard test apparatus, as there are nó standards covering the testing work for this class of material in existence to-day.

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The specifications covering Air Brake and Signal Hose for Passenger and Freight Equipment Cars have been revised, changing the form of the specifications and explaining the methods of test, but the committee has endeavored not to make any changes in the requirements of the specifications other than those in existence as Standard, and as adopted in 1913.

Your committee respectfully recommends that the revision of the specifications for Air Brake and Signal Hose for Passenger and Freight Equipment Cars be made Standard.

2. That the specifications offered for steel axles be adopted as Standard, and

3. That the following specifications be submitted to letter ballot as Recommended Practice:

Refined wrought-iron bars,
Heat-treated knuckle pivot pins,
Welded pipe,
Helical springs,
Chain,
Journal-box brasses.

Respectfully,

C. D. YOUNG, Chairman,
J. R. ONDERDONK,
J. J. BIRCH,
J. S. DOWNING,
E. P. TILT,
FRANK ZELENY,
J. S. SHEAFE,
J. W. TAYLOR,
Committee.

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SPECIFICATIONS

FOR

AIR-BRAKE AND SIGNAL HOSE FOR PASSENGER AND FREIGHT EQUIPMENT CARS.

I. MANUFACTURE.

1. All hose shall be soft and pliable and not less than four-ply. They shall be made of rubber and cotton fabric, each the best of its kind for the purpose.

II. PHYSICAL PROPERTIES AND TESTS.

2. Hose shall be subjected to the following tests, which should be made at a room temperature of not less than 50 deg. F.

3. **FRICTION TEST.**— The quality of friction shall be determined by suspending a 20-lb. weight from the separated end of the duck of one of the 1-in. test specimens described in Section 9, the force being applied radially. The separation shall be uniform and regular, and the average speed shall not exceed 8 in. in 10 min., the distance being measured while the weight is still in place.

4. **STRETCHING TEST.**— The test specimen will be quickly stretched until the 2-in. marks are 10 in. apart and immediately released. They will then be re-marked as at first within 10 sec. after starting to release and again stretched to 10 in. between the new marks, remaining so stretched for 10 min. The specimens shall then be completely released, and within 30 sec. after starting to release the distance between the marks last applied will be measured, and the initial set must not be more than ¼ in. At the end of 10 min. the distance between the marks will again be measured, and the final set must not be more than ⅛ in. These test specimens may be cut from the tube and cover of the friction-test specimen, but shall not be used for tensile test.

5. **TENSILE STRENGTH.**— Test specimens from tube and cover shall be pulled in a tensile machine with a test speed of 20 in. per minute. The inner tube must have a tensile strength of not less than 800 lb. or more than 1200 lb. per sq. in., and the cover not less than 700 lb. or more than 1100 lb. per sq. in. The elongation shall be such that the marks originally 2 in. apart, stretch to at least 10 in. before specimen breaks. If the tensile strength in lb. per sq. in. is greater than that required, the sample may be accepted, providing the per cent increase in elongation is equal to or greater than the per cent increase in tensile strength in lb. per sq. in. above the maximum figure.

6. **TENSILE STRENGTH OF DUCK.**— From the 3-in. section remaining after the friction, stretching and tensile tests are made, a strip of duck the entire length of this section will be taken. One piece will be cut 3 in. wide and parallel with the warp threads of the duck, another

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piece will be cut 3 in. wide and parallel with the filler threads. The tensile strength of each of these pieces shall be determined in the usual manner by the use of standard M. C. B. grips (see Fig. 1) placed 1 in. apart directly opposite one another on the center of the test section. The section thus tested must develop a tensile strength of at least 225 lb. per in. for both warp and filler threads. The rate of separation of the grips shall be approximately 20 in. per minute and in no case shall the test be counted when the duck breaks in the grips.

7. **POROSITY TEST.**— The remaining 17 in. shall be mounted and placed in a test rack, the circumference will be measured and the hose filled with air at 140 lb. pressure per sq. in., the rubber cover shall be cut from clamp to clamp (taking care not to injure the duck) and this pressure maintained for 5 min. At the end of this time the hose will be submerged in water to determine whether the inner tube is porous. The escape of air through the tube shall be distinct enough so that the porosity will not be confused with the escape of air which is confined in the structure of the hose.

8. **BURSTING TEST.**— The section of hose which was used for porosity test shall then be subjected to a hydraulic pressure of 200 lb. per sq. in., under which pressure it shall not expand more than ¾ in. in circumference for air brake hose and $1\frac{1}{8}$ in. for air signal hose, nor develop any small leaks or defects. After the above tests, this section shall then stand a hydraulic pressure of 500 lb. per sq. in. for 10 min. without bursting or developing any leaks or defects.

9. **TEST SPECIMEN.**— A hose shall be selected at random and a section 5 in. long cut from one end. Two sections, each 1 in. long, shall be cut from the 5-in. section for making the friction, stretching and tensile tests, the remaining 3-in. section shall be used for making the tests on the duck or additional tests which may be desired on the tube and cover. Stretching and tensile specimens shall be cut from tube and cover with a die having the dimensions shown in Fig. 2.

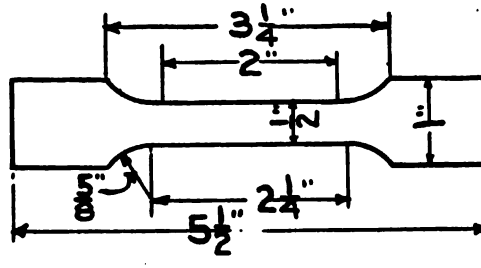

FIG. 2.

10. **NUMBER OF TESTS.**— For each lot of 200 pieces of hose one extra hose shall be furnished free of costs for test purposes.

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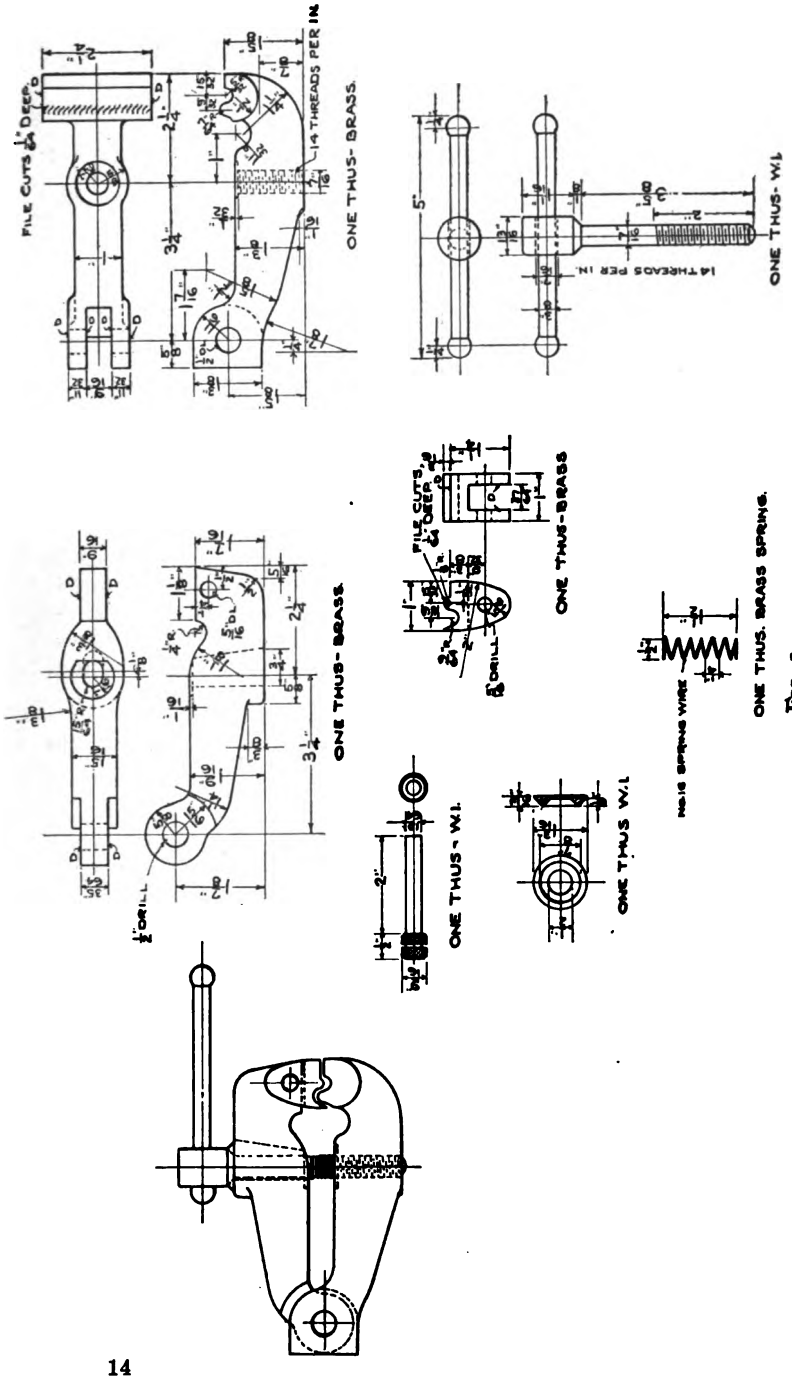

FIG. I.

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III. PERMISSIBLE VARIATIONS.

	Length, In.	Outside Diameter, In.	Inside Diameter, In.	Thickness of Cap Vulcanized on, In.
AIR-BRAKE HOSE.				
Maximum	22½	2⅛	1 7/16	3/32
Minimum	22	2 1/16	1⅜	1/32
AIR-SIGNAL HOSE.				
Maximum	22½	1⅞	1 1/16	3/32
Minimum	22	1 13/16	1⅛	1/32

IV. WORKMANSHIP AND FINISH.

11. **WORKMANSHIP.**— (a) *Tube.*— The tube shall be made either by hand or machine. It shall be free from holes and imperfections, and in joining must be so firmly united to the cotton fabric that it will meet the friction tests prescribed in Section 3. The tube shall be of such a composition and so cured as to successfully meet the requirements of tests given in Sections 4 and 5, the tubes to be not less than 3/32 in. thick.

(b) *Cover.*— The cover shall be of the same quality of rubber as the tube and shall not be less than 1/16 in. thick,

(c) *Duck.*— The canvas or duck used as a wrapping for the hose shall be made of long fiber cotton, loosely woven, and shall weigh not less than 22 oz. per lin. yd., 40 in. wide. The canvas or duck shall be frictioned with rubber on both sides and shall be applied on the bias and edges lapped at least ½ in. and not sewed.

12. **FINISH.**— The hose shall be smooth and regular in size throughout its entire length.

V. MARKING.

13. **SERIAL NUMBER.**— Each lot of 200 or less shall bear the manufacturer's serial number, commencing at 1 on the first of the year and continuing consecutively until the end of the year.

14. **LABEL.**— Each length of hose shall have vulcanized on it the label for air-brake hose of red rubber, as shown under the specifications for "Label for Air-brake Hose."

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VI. INSPECTION AND REJECTION.

15. **INSPECTION.**— (a) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the material is being furnished in accordance with these specifications.

(b) The purchaser may make the tests and inspection to govern the acceptance or rejection of the material in his own laboratory or elsewhere. Such tests and inspection shall be made at the expense of the purchaser.

(c) All tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the works.

16. **REJECTION.**— Material which, subsequently to above tests at the mills or elsewhere, and its acceptance, develops weak spots or imperfections, or fails to pass any one of the tests herein required, will be rejected and shall be replaced by the manufacturer at his own expense.

17. **REHEARING.**— Samples tested in accordance with this specication, which represent rejected material, shall be preserved for 14 days from date of test report. In case of dissatisfaction with results of the tests, the manufacturer may make claim for a rehearing within that time.

SPECIFICATIONS

FOR

WELDED PIPE FOR PASSENGER AND FREIGHT EQUIPMENT CARS.

I. MANUFACTURE.

1. **PROCESS.**— (a) Steel used in the manufacture of pipe shall be of a soft, weldable quality made by the Bessemer process.

(b) The wrought iron used in the manufacture of pipe shall be double-refined.

(c) All pipe 2 in. nominal diameter or under may be butt-welded, but all pipe larger shall be lap-welded.

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II. PHYSICAL PROPERTIES AND TESTS.

2. **TENSION TESTS.**— The material shall conform to the following minimum requirements as to tensile properties:

	Steel.	W. I.
Tensile strength, lb. per sq. in.	50 000	45 000
Elastic limit, " " " "	30 000	.....
Elongation in 8 in. ..... per cent	18	12

3. **HYDROSTATIC TESTS.**— All pipe shall be tested to the following hydrostatic pressures:

Size.	Standard Grade Pipe. Single Thickness.		Extra Strong Pipe. Double Thickness.	
	Butt.	Lap.	Butt.	Lap.
1/8	700	.....	700	.....
1/4	700	.....	700	.....
3/8	700	.....	700	.....
1/2	700	.....	700	.....
3/4	700	.....	700	.....
1	700	.....	1 500	.....
1 1/4	700	.....	1 500	.....
1 1/2	700	1 000	1 500	2 500
2	700	1 000	1 500	2 500
2 1/2	.....	1 000	.....	2 000
3	.....	1 000	.....	2 000
3 1/2	.....	1 000	.....	2 000
4	.....	1 000	.....	2 000

4. **FLATTENING TEST.**— A section of pipe 6 in. long shall be placed in a compression machine with the weld at the top and flattened until the distance between the plates of the machine is 60 per cent of original external diameter for wrought iron and 25 per cent for steel pipe. The pipe shall not show any opening, except that opening of the weld will not be considered cause for rejection.

5. **BEND TEST.**— A sufficient length of pipe to be bent cold 180 deg. around a mandrel the diameter of which is 18 times the nominal diameter of the pipe without any opening of weld or cracks in any portion of pipe.

6. **TEST SPECIMENS.**— Test specimens shall consist of sections cut from a pipe; they shall be smooth on the ends and free from burrs.

7. **NUMBER OF TESTS.**— One of each of the above tests shall be made from each diameter of pipe for each 2000 ft. or less.

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III. WEIGHTS.

8. **WEIGHTS.**— The standard weights for pipes of various inside diameters are as follows:

Standard Grade Pipe. Single Thickness.			Extra Strong Pipe. Double Thickness.		
Nominal Diameter, In.	Outside Diameter, In.	Weight of Pipe per Lin. Ft. threaded with Couplings.	Outside Diameter, In.	Weight of Pipe per Lin. Ft. Plain Ends.	No. of Threads.
⅛	.405	.25	.405	.31	27
¼	.540	.43	.540	.54	18
⅜	.675	.57	.675	.74	18
½	.840	.85	.840	1.09	14
¾	1.050	1.13	1.050	1.47	14
1	1.315	1.68	1.315	2.17	11½
1¼	1.660	2.28	1.660	3.00	11½
1½	1.900	2.73	1.900	3.63	11½
2	2.375	3.68	2.375	5.02	11½
2½	2.875	5.82	2.875	7.66	8
3	3.500	7.62	3.500	10.25	8
3½	4.000	9.20	4.000	12.51	8
4	4.500	10.89	4.500	14.98	8

Ten per cent of each lot shall be weighed and a comparison made with the sample. All pipe shall be rejected that varies more than 5 per cent from that given in the above table.

IV. WORKMANSHIP AND FINISH.

9. **WORKMANSHIP.**— The finished pipes shall be circular within 0.02 in. All pipe shall be provided with the prevailing standard thread, which will make a tight joint when tested to the internal hydrostatic pressure at the mills. The threads shall not vary more than one and one-half turns either way when tested with a Pratt and Whitney standard gage. All burrs at the end shall be removed.

(b) *Couplings.*— Each pipe shall be provided with a standard coupling, having clean-cut threads tapped straight through and of such a pitch diameter that will make a tight joint. Coupling may be wrought iron or steel.

10. **FINISH.**— The finished pipe shall be reasonably straight and free from injurious defects.

V. INSPECTION AND REJECTION.

11. **INSPECTION.**— (a) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the pur-

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chaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the material is being furnished in accordance with these specifications.

(b) The purchaser may make the tests to govern the acceptance or rejection of the material in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

(c) All tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the works.

12. **REJECTION.**— Material which, subsequently to above tests at the mills or elsewhere, and its acceptance, develops weak spots, cracks or imperfections, or is found to have injurious defects, will be rejected and shall be replaced by the manufacturer at his own expense.

13. **REHEARING.**— Samples tested in accordance with this specification, which represent rejected material, shall be preserved for 14 days from date of test report. In case of dissatisfaction with results of tests, the manufacturer may make claim for a rehearing within that time.

SPECIFICATIONS

FOR

HEAT-TREATED KNUCKLE PIVOT PINS FOR PASSENGER AND FREIGHT EQUIPMENT CARS.

I. MANUFACTURE.

1. **PROCESS.**— The steel shall be made by the open-hearth process.

2. **HEAT TREATMENT.**— The pins shall be properly heat-treated to meet the requirements of the physical tests.

II. CHEMICAL PROPERTIES AND TESTS.

3. **CHEMICAL COMPOSITION.**— The steel shall conform to the following requirements as to chemical composition:

Carbon	0.55 — 0.70	per cent.
Manganese	0.40 — 0.60	"
Phosphorus, not over	0.05	"
Sulphur, not over	0.05	"
Silicon	0.15 — 0.25	"

4. **LADLE ANALYSIS.**—An analysis shall be made by the manufacturer from a test ingot taken during the pouring of each melt, to determine the percentage of carbon, manganese, phosphorus, sulphur and silicon. Drillings for analysis shall be taken not less than ¼ in. beneath the surface

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of the test ingot. A copy of this analysis shall be given the purchaser or his representative. This analysis shall conform to the requirements specified in Section 3.

5. **CHECK ANALYSIS.**—A check analysis shall be made from the finished material representing each melt, by the purchaser or his representative, and shall meet the requirements specified in Section 3.

III. PHYSICAL PROPERTIES AND TESTS.

6. **DROP TESTS.**— This test shall be made on a standard "M. C. B." drop-test machine (see Plate 29-D), the pins resting on rounded supports held rigidly 10 in. center to center, to be subjected to a blow by a standard weight of 1640 lb. falling from a height of 3 ft., and shall show a deflection not less than 15 deg. or more than 35 deg. without cracking or breaking.

7. **NUMBER OF TESTS.**— The manufacturers shall furnish, free of charge, one extra pin with each lot of 200 or less.

IV. PERMISSIBLE VARIATIONS.

8. **PERMISSIBLE VARIATIONS.**— The diameter of the pins shall conform to the standard M. C. B. limit gages for rounds. The length shall not vary more than $\frac{1}{8}$ in. below or above that specified.

V. FINISH.

9. **FINISH.**— The finished pin shall be straight, have a smooth surface, be uniform in diameter and shall not be painted.

VI. MARKINGS.

10. **MARKINGS.**—The manufacturer's name or identification marks shall be stamped on the head of each pin.

VII. INSPECTION AND REJECTION.

11. **INSPECTION.**—(a) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of costs, all reasonable facilities to satisfy him that the material is being furnished in accordance with these specifications.

(b) The purchaser may make the tests to govern the acceptance or rejection of the material in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

(c) All tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the works.

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12. **REJECTION.**— Material which, subsequently to above tests at the mills or elsewhere, and its acceptance, develops weak spots, cracks or imperfections, or is found to have injurious defects, will be rejected and shall be replaced by the manufacturer at his own expense.

13. **REHEARING.**— Samples tested in accordance with this specification, which represent rejected material, shall be preserved for 14 days from date of test report. In case of dissatisfaction with results of tests, the manufacturer may make claim for a rehearing within that time.

SPECIFICATIONS
FOR
STEEL AXLES FOR PASSENGER AND FREIGHT EQUIPMENT CARS.

I. MANUFACTURE.

1. **PROCESS.**— The steel shall be made by the open-hearth process.

II. CHEMICAL PROPERTIES AND TESTS.

2. **CHEMICAL COMPOSITION.**— The steel shall conform to the following requirements as to chemical composition:

Carbon	0.38 — 0.52	per cent.
Manganese	0.40 — 0.60	"
Phosphorus, not over	0.05	"
Sulphur, not over	0.05	"

3. **LADLE ANALYSIS.**— An analysis shall be made by the manufacturer from a test ingot taken during the pouring of each melt, to determine the percentage of carbon, manganese, phosphorus, sulphur and silicon. Drillings for analysis shall be taken not less than ¼ in. beneath the surface of the test ingot. A copy of this analysis shall be given the purchaser or his representative. This analysis shall conform to the requirements specified in Section 2.

4. **CHECK ANALYSIS.**— A check analysis shall be made from the finished material representing each melt, by the purchaser or his representative, and shall meet the requirements specified in Section 2.

III. PHYSICAL PROPERTIES AND TESTS.

5. **DROP TESTS.**— The axles shall conform to the following drop-test requirements:

(a) The test axle shall be so placed on the supports that the tup will strike it midway between the ends. It shall be turned over after the first and third blows, and when required after the fifth blow. When tested in

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accordance with the following conditions, the axle shall stand the specified number of blows without fracture, and the deflection after the first blow shall not exceed that specified in Table No. 1.

Size of Axle, In.		Capacity of Cars, Lb.	Distance between Supports, Ft.	Weight of Tup, Lb.					
				1 640			2 200		
Journal.	Diam. at Center.			Height of Drop, Ft.	Number of Blows.	Max. Deflection, In.	Height of Drop, Ft.	Number of Blows.	Max. Deflection, In.
4¼ x 8	4¾	60 000	3	34	5	7½	.....	.....	.....
5 x 9	5⅜	80 000	3	43	5	6¼	.....	.....	.....
5½ x 10	5⅞	100 000	3	43	7	4½	.....	.....	.....
6 x 11	$6\frac{7}{16}$	.....	3	.....	.....	.....	40	7	5¼

(b) The deflection is the difference between the distance from a straight edge to the middle point of the axle, measured before the first blow, and the distance measured in the same manner after the blow. The straight edge shall rest only on the collars or the ends of the axle.

6. **DROP-TEST MACHINE.**— The anvil of the drop-test machine shall be supported on 12 springs, as shown on the M. C. B. drawings, and shall be free to move in a vertical direction, and shall weigh 17,500 lb. The radii of the striking face of the tup and of the supports shall be 5 in.

7. **NUMBER OF TESTS.**— (a) One drop test shall be made from each melt. Unless otherwise specified, not less than 30 axles shall be offered from any one melt.

(b) If the test axle passes the physical tests, the inspector shall draw a straight line 10 in. long parallel with the axis of the axle, and starting with one end of it he shall prick-punch this line at several points. A piece 6 in. long shall be cut off from this same axle so as to leave some prick-punch marks on each piece of axle. Drillings for chemical analysis shall be taken by using a ⅝-in. drill and drilling in the cut-off end 50 per cent of the distance from the center to the circumference and parallel with the axis of the axle.

IV. WORKMANSHIP AND FINISH.

8. **WORKMANSHIP.**— All axles shall be made and finished in a workmanlike manner and all journals and wheel seats shall be rough-turned. In centering, unless otherwise specified, 60-deg. centers shall be used with large diameter of countersink not less than ⅞ in. and with clearance drilled ½ in. deep.

9. **FINISH.**— The axles shall be free from injurious defects and shall have a workmanlike finish.

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V. PERMISSIBLE VARIATIONS AND WEIGHTS.

10. **PERMISSIBLE VARIATION.**— The axle shall conform in size and shape to the standard M. C. B. drawings (see Sheet No. 15). Length shall not be less than shown and not more than $\frac{1}{32}$ in. over.

VI. MARKING AND STORING.

11. **MARKING.**— The manufacturer's name or brand, melt number and month and year when made shall be legibly stamped on each axle on the unfinished portion, unless otherwise specified.

12. **STORING.**—If, as a result of the inspection and tests, more axles are accepted than the order calls for, such accepted axles in excess shall be stamped by the inspector with his own name, and will then be piled and allowed to remain in stock at the works, subject to further orders from the purchasing agent. On receipt of further orders, axles once accepted will not be subjected to further test. In all cases the inspector will keep an accurate record of the melt numbers and the number of axles in each melt which are stored and will transmit this information with each report.

VII. INSPECTION AND REJECTION.

13. **INSPECTION.**— (a) The inspector shall examine each axle in each melt for workmanship, defects, and to see whether the axles conform to the dimensions given on the order or tracing, or whether they conform to the specifications. All axles not satisfactory in these respects shall not be considered further. If in this inspection defects are found which the manufacturer can remedy while the inspector is at the works, he may be allowed to correct such defects.

(b) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the material is being furnished in accordance with these specifications.

(c) The purchaser may make the tests to govern the acceptance or rejection of the material in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

(d) All tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the works.

14. **REJECTION.**— Material which, subsequently to above tests at the mills or elsewhere, and its acceptance, develops any imperfections, shall be rejected and shall be replaced by the manufacturer at his own expense.

15. **REHEARING.**— Samples tested in accordance with this specification, which represent rejected material, shall be preserved for 14 days from date of test report. In case of dissatisfaction with results of the tests, the manufacturer may make claim for a rehearing within that time.

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SPECIFICATIONS

FOR

REFINED WROUGHT-IRON BARS FOR PASSENGER AND FREIGHT EQUIPMENT CARS.

I. MANUFACTURE.

1. **PROCESS.**— The finished product shall consist either of new muck-bar iron or a mixture of muck-bar iron and scrap, but shall be free from any admixture of steel. Muck bars shall be made wholly from puddled iron.

II. PHYSICAL PROPERTIES AND TESTS.

2. **TENSION TESTS.**— Unless otherwise specified, the iron shall conform to the following requirements as to tensile properties:

Tensile strength, lb. per sq. in.....47,000 — 53,000
Elongation in 8 in., minimum per cent.....22

3. **PERMISSIBLE VARIATIONS IN PHYSICAL PROPERTIES.**— (a) *Tensile Strength.*— Large sections reduced or flats and rounds of ½ in. or under may show a tensile strength of 45,000-52,000 lb. per sq. in.

(b) *Elongation.*— Twenty per cent of the test specimens representing one size may show the following percentage of elongation in 8 in.:

½ in. or over, tested as rolled.....20 per cent.
Under ½ in., tested as rolled.....16 per cent.
Reduced by machining.....18 per cent.

FLAT BARS:

⅜ in. or over, tested as rolled.....18 per cent.
Under ⅜ in., tested as rolled.....16 per cent.
Reduced by machining.....16 per cent.

4. **BEND TESTS.**— (a) *Cold-bend Test.*— For round, square and hexagon bars under 2 sq. in. in section, and for flats less than ¾ in. thick, shall bend cold around a pin the diameter of which is equal to the diameter or thickness of the specimen. For rounds, flats and hexagon bars 2 sq. in. or over in section, and for all flat bars over ¾ in. in thickness, around a pin the diameter of which is equal to twice the diameter or thickness of the specimen.

(b) *Hot-bend Test.*— The test specimen, when heated to a temperature between 1700 and 1800 deg. F. (light cherry red), shall bend through 180 deg. without fracture on the outside of the bent portion, as follows: For round, flat and hexagon bars under 2 sq. in. in section, flat on itself; for round, flat and hexagon bars 2 sq. in. and over in section, around a pin the diameter of which is equal to the diameter or thickness of the specimen.

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(c) *Nick-bend Test.*— The test specimen, when nicked 25 per cent around the round bar, and along one side for flat bars, with a tool having a 60-deg. cutting edge, to a depth of not less than 8 or more than 16 per cent of the diameter or thickness of the specimen, and broken, shall not show more than 10 per cent of the fractured surface to be crystalline.

5. **TEST SPECIMEN.**— Tension and bend test specimens shall be of the full section of material as rolled, if possible, otherwise the specimens shall be machined from the material as rolled; the axis of the machined specimen shall be located at any point one-half the distance from the center to the surface of round bars, or from the center to the edge of flat bars, and shall be parallel to the axis of the bar.

6. **NUMBER OF TESTS.**— (a) All bars of one size shall be piled separately. One bar from each 200 or less shall be selected at random and tested as specified.

(b) If any test specimen from the bar originally selected to represent a lot of material contains surface defects not visible before testing, but visible after testing, or if a tension-test specimen breaks outside the middle third of the gage length, one retest from a bar will be allowed.

III. PERMISSIBLE VARIATIONS IN GAGE.

7. **PERMISSIBLE VARIATIONS.**— (a) *Round bars* shall conform to the standard M. C. B. limit gages.

(b) *Flat Bars.*— Thickness shall not vary more than corresponding diameter for rounds: thus, 1 in. thick could vary from 0.9905 to 1.0095 in.

(1) Sizes under 3 in. wide shall not be more than $\frac{1}{32}$ in. under or over size in width.

(2) Sizes 3 in. and over shall not be under size or more than $\frac{1}{16}$ in. wider than ordered.

IV. FINISH.

8. **FINISH.**— The bars shall be smoothly rolled and free from slivers, depressions, seams, crop ends, and evidences of being burned.

V. INSPECTION AND REJECTION.

9. **INSPECTION.**— (a) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the material is being furnished in accordance with these specifications.

(b) The purchaser may make the tests to govern the acceptance or rejection of the material in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

(c) All tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the works.

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10. **REJECTION.**— Material which, subsequently to the above tests at the mills or elsewhere, and its acceptance, develops weak spots, cracks or imperfections, or is found to have injurious defects, shall be rejected and shall be replaced by the manufacturer at his own expense.

11. **REHEARING.**— Samples tested in accordance with this specification, which represent rejected material, shall be preserved for 14 days from date of test report. In case of dissatisfaction with results of tests, the manufacturer may make claim for a rehearing within that time.

SPECIFICATIONS

FOR

HELICAL SPRINGS FOR PASSENGER AND FREIGHT EQUIPMENT CARS.

I. MANUFACTURE.

1. **PROCESS.**— The steel shall be made by the open-hearth, electric or crucible process.

II. CHEMICAL PROPERTIES AND TESTS.

2. **CHEMICAL COMPOSITION.**— The steel shall conform to the following requirements as to chemical composition:

	Bars 1 in. and under.	Over 1 in.
Carbon	0.90 — 1.10 per cent.	0.95 — 1.15 per cent.
Manganese, not over	0.50 "	0.50 "
Phosphorus, not over	0.05 "	0.05 "
Sulphur, not over	0.05 "	0.05 "

3. **LADLE ANALYSIS.**— An analysis shall be made by the manufacturer from a test ingot taken during the pouring of each melt, to determine the percentage of carbon, manganese, phosphorus, sulphur and silicon. Drillings for analysis shall be taken not less than ¼ in. beneath the surface of the test ingot. A copy of this analysis shall be given the purchaser or his representative. This analysis shall conform to the requirements specified in Section 2.

4. **CHECK ANALYSIS.**— A check analysis shall be made by the purchaser or his representative from the finished material representing each lot as specified in Section 5, and shall meet the requirements specified in Section 2.

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5. **NUMBER OF CHEMICAL TESTS.**— One sample from each 500 springs or less shall be taken. If the springs are small the entire spring shall be taken; if large, a section weighing ½ lb. shall be cut from any part of the spring. The sample shall be stamped as soon as chosen with the inspector's stamp. If the sample for chemical analysis is cut off hot, it shall be cooled in such a way as not to harden it.

III. PHYSICAL PROPERTIES AND TESTS.

6. **TESTS.**— (a) *Free Height.*— Place each spring on a flat plate and measure the distance between the plate and the other end of the spring. This measurement is the free height.

(b) *Solid Height.*— Place the measured springs, either singly or in lots, in the testing machine and apply a load at least 25 per cent greater than the capacity of the springs, then measure the distance between the two plates of the machine. This is the solid height.

(c) *Set.*— Remove the load and again measure the free height at the same point in the circumference at which the first free height was taken. If now the second free height is less than the first by more than $\frac{1}{32}$ in., the spring or springs will be regarded as having taken permanent set and will be excluded from further consideration.

(d) *Working Height.*— Apply the specified working load and measure the height.

7. **NUMBER OF TESTS.**— Unless otherwise specified, 10 per cent of all springs will be subjected to the above tests.

8. **COMPRESSION TESTS.**— All springs shall be compressed solid at least six times before submitting them for inspection and tests.

9. **PREPARATION FOR TESTS.**— Unless otherwise specified, all springs shall be tested after being assembled.

IV. PERMISSIBLE VARIATIONS AND WEIGHTS.

10. **DIMENSIONS.**— All springs shall not vary more than $\frac{1}{8}$ in. from specified height or $\frac{1}{16}$ in. from specified diameter.

11. **WEIGHT.**— Ten per cent of the springs shall be weighed, and if any springs are found that weigh less than the specified minimum, the whole lot shall be weighed and all springs that weigh less than the minimum shall be excluded.

V. FINISH.

12. **FINISH.**— The bars shall be free from injurious defects and shall be rolled within 0.01 in. of the specified diameter.

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VI. MARKING.

13. **MARKING.**— The springs shall be marked as specified by the purchaser.

VII. INSPECTION AND REJECTION.

14. **INSPECTION.**— (a) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the material is being furnished in accordance with these specifications.

(b) The purchaser may make the tests to govern the acceptance or rejection of the material in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

(c) All tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the works.

15. **REJECTION.**— Material which, subsequently to above tests at the mills or elsewhere, and its acceptance, develops imperfections or does not come within the permissible variations given in Sections 10 and 11, will be rejected and shall be replaced by the manufacturer at his own expense.

16. **REHEARING.**— Samples tested in accordance with this specification, which represent rejected material, shall be preserved for 14 days from date of test report. In case of dissatisfaction with results of tests, the manufacturer may make claim for a rehearing within that time.

SPECIFICATIONS

FOR

CHAIN FOR PASSENGER AND FREIGHT EQUIPMENT CARS.

I. MANUFACTURE.

1. **PROCESS.**— The chain may be made of either iron or soft steel. Chain $\frac{5}{16}$ in. in diameter or less may have links twisted, if so specified on the order; all other sizes shall have straight links.

II. PHYSICAL PROPERTIES AND TESTS.

2. **PROOF TEST.**— All chain shall be proof-tested in accordance with the following table and shall stand these loads without deformation. The manufacturer shall furnish a certificate of proof test to the purchaser or his representative.

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TABLE No. 1.

Nominal Diameter of Wire, In.	Maximum Length 100 Links, In.	Weight per Ft., Lb.	Steel Chain.			Iron Chain.		
			Proof Test.	Min. Breaking Weight, Lb.	Min. Elongation, Per Cent.	Proof Test.	Min. Breaking Weight, Lb.	Min. Elongation, Per Cent.
1/4	102.0	0.75	1 650	3 300	12	1 400	2 800	8
5/16	114.7	1.00	3 000	6 000	12	2 500	5 000	8
3/8	114.7	1.50	4 000	8 000	12	3 400	6 800	8
7/16	127.5	2.00	5 500	11 000	15	4 650	9 300	10
1/2	153.0	2.50	7 000	14 000	15	6 000	12 000	10
5/8	178.5	4.10	11 000	22 000	15	9 250	18 500	10
3/4	204.0	6.00	16 000	32 000	15	13 500	27 000	10
7/8	255.0	8.00	22 000	44 000	15	18 500	37 000	10
1	280.5	10.00	29 000	58 000	15	24 500	49 000	10
1 1/8	303.0	13.00	36 000	72 000	15	30 500	61 000	10
1 1/4	353.5	16.00	44 000	88 000	15	32 000	74 500	10
1 1/2	420.0	22.00	62 500	125 000	15	53 000	106 000	10
1 3/4	479.7	30.00	90 160	180 320	15	75 000	150 000	10
2	555.5	40.00	110 000	220 000	15	93 500	187 000	10

4. **TENSILE TEST.**— A piece of chain 2 ft. long will be taken from every 200 ft. or less of each size presented for shipment and tested to destruction in accordance with Table No. 1.

5. **LENGTH.**— The length of 100 links, inside to inside of end links, shall not exceed by more than 2 per cent the figures given in Table No. 1.

6. **WEIGHT.**—The average weight per ft. shall not exceed that given in Table No. 1 and shall not vary more than 8 per cent below.

III. WORKMANSHIP AND FINISH.

7. **WORKMANSHIP.**— All chain shall be free from links that have been burned or overheated, or show cracks or flaws, whether caused by welding, bending, forging, overlapping, or due to handling of original material in manufacture.

8. **FINISH.**— All chain shall have a smooth, workmanlike finish, and the diameter of the bar at the welds shall not be perceptibly larger or smaller than the bar.

9. **PAINT.**— Chains shall not be painted before inspection.

IV. INSPECTION AND REJECTION.

10. **INSPECTION.**— (a) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which

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concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the material is being furnished in accordance with these specifications.

(b) The purchaser may make the tests to govern the acceptance or rejection of the material in his own laboratory or elsewhere. Such tests, however, shall be made at the expense of the purchaser.

(c) All tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the works.

11. **REJECTION.**— Material which, subsequently to the above tests at the mills or elsewhere, and its acceptance, develops weakness or imperfections, or is found to have injurious defects, will be rejected and shall be replaced by the manufacturer at his own expense.

12. **REHEARING.**— Samples tested in accordance with this specification, which represent rejected material, shall be preserved for 14 days from date of test report. In case of dissatisfaction with results of tests, the manufacturer may make claim for a rehearing within that time.

SPECIFICATIONS

FOR

JOURNAL-BOX BRASSES FOR PASSENGER AND FREIGHT EQUIPMENT CARS.

I. CHEMICAL PROPERTIES AND TESTS.

1. **COMPOSITION OF SHELL.**— The shell shall conform to the following requirements as to chemical composition:

Lead	10.00 — 30.00	per cent.
Tin, not over	7.00	"
Copper to be remaining	.....	"

2. **COMPOSITION OF LINING.**— The lining metal shall conform to the following requirements as to chemical composition:

Lead, Tin	Optional	per cent.
Antimony, not over	14.00	"

II. PHYSICAL PROPERTIES AND TESTS.

3. **TEST.**— A finished bearing shall be broken through the middle to ascertain the uniformity of the grain of the metal. Where metal shows distinct signs of imperfect mixing, such as separation of component parts, dross or dirt spots, the lot shall be rejected.

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4. **NUMBER OF TESTS.**— Bearings shall be divided into lots of 300 or less and one bearing shall be taken for tests and analysis from each lot or less.

III. PERMISSIBLE VARIATIONS IN GAGINGS.

5. **GAGING.**— All bearings shall conform to gages and dimensions shown on drawings, and when linings are required they shall conform to the gages and dimensions for linings as shown on drawings.

IV. FINISH.

6. **FINISH.**— All bearing surfaces shall be smooth and free from tool marks. The castings shall be sound and free from blowholes, dross or mechanical defects.

V. MARKING.

7. **MARKING.**— Each journal bearing shall have a lot number legibly cast on the sloping surface of the shoulder of the brass and an individual number beginning with 1 at the beginning of each order.

VI. INSPECTION AND REJECTION.

8. **INSPECTION.**—(a) The inspector representing the purchaser shall have free entry, at all times while work on the contract of the purchaser is being performed, to all parts of the manufacturer's works which concern the manufacture of the material ordered. The manufacturer shall afford the inspector, free of cost, all reasonable facilities to satisfy him that the material is being furnished in accordance with these specifications.

(b) The purchaser may make the analysis of the material at his own laboratory or elsewhere. Such tests shall show the material to conform to Sections 1 and 2.

(c) All tests and inspection shall be so conducted as not to interfere unnecessarily with the operation of the works.

9. **REJECTION.**— Material which, subsequently to above tests at the mills or elsewhere, and its acceptance, shows any defects shall be rejected and shall be replaced at the expense of the manufacturer.

10. **REHEARING.**— Samples tested in accordance with this specification, which represent rejected material, shall be preserved for 14 days from date of test report. In case of dissatisfaction with results of tests, the manufacturer may make claim for a rehearing within that time.

Mr. Young said, in connection with the report:

C. D. YOUNG (Penna. R. R.): Since the preparation of this report, the committee has again met with the manufacturers of

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rubber goods, and would like to offer some slight modifications in the wording of the specifications as they are now written. This meeting was held on Monday of this week, and therefore, the committee did not have time to have these changes sent out to the membership with the advance copy of the circular. They touch entirely upon changes, clarifying the methods of tests, which is one of the difficulties which the railroads and manufacturers have in agreeing upon the acceptance and rejection of this material. With the consent of the Chair, I will read only the changes which have been agreed upon. Page 3, paragraph 2, change to read: "Hose shall be subjected to the following tests, which shall be made at a room temperature of not less than 65 deg. F." This is an increase in temperature at which the hose should be tested, as tests made both by the manufacturers and the railroads have shown that the properties of rubber below a temperature of approximately 60 deg. change, so that it does not give you satisfactory or uniform results.

Paragraph 4, stretching test, the first sentence should read: "Test specimens from tube and cover will be quickly stretched," and so forth, simply indicating that the tube and cover are included in this stretching test.

On the next page, page 4, add a sentence to paragraph 8 on "Bursting test," as follows: "In event the hose fails on bursting test at the point at which cut was made for porosity test and a satisfactory hydraulic test is not obtained, the porosity and hydraulic test will be repeated on another piece of hose." The manufacturers were desirous of not making the hydraulic test on the piece of hose which is used for the porosity test, but the committee felt that this would be an extravagant waste of material, as it would require two testing pieces instead of one, and as very little trouble is obtained in getting the hydraulic test, when the porosity test is properly made, namely, by careful removal of the cover, we feel that this clause will take care of the objections of the manufacturers to the bursting test following the porosity test.

On page 5, the illustration, Fig. 1, shows the grips which are used in making the duck test, and there should be a note added to this drawing that "The jaws are to be lined with duck." This

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is to protect the cotton threads in pulling. The committee is considering, in connection with this cut, and in connection with the requirements on the duck, the elimination of this test and the elimination of the requirement as to the weight of duck, the idea being that if the hose passes a bursting test 50 per cent in excess of the hydraulic test, that it will be acceptable, and this will be a sufficient test of the duck used in the construction of hose. Sufficient data have not been accumulated on this subject, and this will be a subject of further investigation by the manufacturers and the committee.

On page 6, " Workmanship," under "(b)" *cover*. The cover shall be of the same quality of rubber as the tube and shall not be less than 1-16 in. thick, and shall meet the requirements of tests given in Sections 4 and 5." This is simply to make clear the meaning of Section (b) as now printed.

The same page, Section V, MARKING, paragraph 14, LABEL, add a sentence under the first paragraph reading: " This label shall be applied around the hose at a point 6 in. from the end and with the top of the lettering towards the center of the hose." The question has been raised, and some trouble has been found between the manufacturers and the railroads. Some railroads said that the letters should face one way, and some the other, and the committee has simply arbitrarily taken one location, so as to avoid disagreement. So far as the committee can see, it makes no difference which way they face, but we thought to make the matter clear, we should define how the label should be applied. That is as far as the lettering is concerned.

Page 7, inspection, paragraph (a), under " 15," the manufacturers strongly object to the first sentence of this paragraph, which is taken from the standard form on inspection from our other specifications, and cite, as their grounds, that in the manufacture of hose, it is largely a secret process, and they object to the inspectors being given free entry to their works. The committee has considered the manufacturers' objection and see no reason, if the finished material comes up to the requirements of the specification, made by a secret process of manufacture, why the railroads should have a right of free entry, and are therefore recommending, and will offer a recommendation for the elimina-

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tion of this first sentence. Your committee in discussing and arriving at this decision, felt, however, it would be well to get an expression of opinion on the floor, in support of their removal of the first sentence of this paragraph.

Page 7, Section 16, "Rejection." There is a change in wording, in order to more definitely determine the time element in the testing of hose, which reads as follows: "Sec. 16. REJECTION. Material which, subsequently to above tests at the mills or elsewhere, and its acceptance, develops weak spots or imperfections, within three months from date of shipment and prior to being placed in service, or fails to pass any one of the tests herein required, will be rejected and shall be replaced by the manufacturer at his own expense." You will notice that this clause now puts a specific time upon the testing of the material, and Section 17 has been elaborated upon a little.

"REHEARING. Samples tested in accordance with this specification, which represent rejected material, shall be preserved for fourteen days from date of test report to the manufacturer. In case of dissatisfaction with results of the tests, the manufacturer may make claim for a rehearing within that time."

This includes all the changes suggested by the committee. As to Section 15, we would like, if possible, to hear the expression of opinion of the convention upon the striking out of the first clause. Our attention has been called to the fact that some of the roads, who are making tests of air-brake hose, are not provided with proper facilities for doing the work, since the interjection of the porosity test, and the increased pressure in the hydraulic test, some roads are not prepared to test at 140 lb. air pressure, and 500 lb. hydraulic pressure. The committee would respectfully request the Association to provide these facilities so that the work can be properly done in accordance with the specifications.

The next specification which is offered for standard, and the only other one, is the axle specification. This specification has been modified, and the chemistry has been changed to require open-hearth steel, excluding all Bessemer steel, by rejection on phosphorus. Our present standard specification for steel being .07 phosphorus requirement, while the reduction here has been

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made to .05, and the carbon has been made to harmonize with the billet specification of the American Society of Testing Materials, and the specification as now worded is practically in harmony with that society's specification.

I would like to call your attention to the table on page 13, in which the Drop-Test for Axles is given, and the 6 by 11 axle is included in this table, which is new.

This committee is further considering this subject and trying to determine some means for using one weight of tup for both the smaller and the larger axle, and this may require a change in the table at some future time. It is possible that we may want to increase the distance between supports for the tests of the heavier section, as it is claimed by some that a satisfactory test on the heavy section can not be obtained with this spacing. The work will be done next year by the committee on this subject.

One of the members of the committee has called attention to the fact that the table for chain on page 20 should have more review before being referred to the Association for Recommended Practice, and as this came before our meeting on Monday, the committee has not had time to consider it, but will do so before the table is submitted to you for letter ballot, in the event it is recommended to refer the specification to letter ballot.

On page 21, journal brass specification, the same member criticized the chemical composition requirement for the lining in this specification. This also will be reviewed by the committee before it is submitted to you for letter ballot.

In the original circular which was sent out for criticism, a definite amount of lead and tin was given for the bronze, but at the last meeting of the committee it was decided, due to a variation in practice, and insufficient data, that it would be best to make the lead and tin optional, so long as the antimony did not exceed 14 per cent. We will consider this subject before it comes to you again. If any of the members have any positive data on performance of lining, giving definite quantities of the lead and tin used, which will be of value to the committee, we would appreciate it if they would correspond with the committee.

I would like to say, in behalf of the committee, that we are working in conjunction with three or four other societies, and

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there is a great deal of work to be done, and they could not possibly submit specifications covering all materials this time.

The committee would appreciate it if the members would try these specifications and criticize them freely, especially those which are to be Recommended Practice, so that we may get the benefit of everybody's experience. Our specifications, without their use, will not mean very much, and we may make mistakes which we can not find, unless we have the specifications actually put into operation by the various roads, and of course the standard specification requires its adoption by the Association.

Mr. Chairman, I move that the recommendations of the committee, paragraphs 1, 2 and 3, on page 2, be adopted and submitted to letter ballot.

MR. GAINES: I second the motion.

THE PRESIDENT: Before putting this motion, I will ask for any discussion of the report, and will consider that the discussion applies to both the report and the motion. The committee has done some very thorough work, and possibly may have left very little to be said on the subjects which they have handled.

An important step has been taken in presenting these specifications and this committee should be continued to cover other subjects in the order of their importance during the ensuing year.

MR. YOUNG: Mr. Chairman, there are some of the representatives of rubber goods manufacturers present in the hall, I believe. I saw some of them sitting in the audience, and I would make a motion that an invitation to discuss our air-brake hose specifications be extended to them, in case they desire to discuss any part of it.

MR. GOODNOW: I second the motion.

THE PRESIDENT: It is moved and seconded that the privilege of the floor be extended to representatives of manufacturers of rubber goods for the discussion of our air-brake hose specifications. We will let this motion take precedence over the other motion, if there are no objections. All in favor of this motion say "aye"; opposed, "no." Carried. If there are any gentlemen representing the manufacturers here, we should be very glad to hear from them. (No response.)

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MR. SCHROYER: I would like to ask the chairman of the committee what the object was in illustrating on page 5 the apparatus for mounting air-brake hose? We have found in our experience that many times it is very disastrous to use machinery for mounting hose, and we abandoned it years ago. We think we can mount two air-brake hose and clamp them about as quickly as you can with any of this machinery. The size of the air-brake hose to-day on the interior is such that they are easily mounted, if you use proper materials. A man with very little effort can push the air-brake hose on to the fittings, and why we should use machinery with power behind it, to distort and disrupt the tubing, which is done in many cases, I do not understand. The point I want to make is this, that illustrating it in the report or in our Proceedings may lead people to use a thing that is disastrous to the use of the hose or to the mounting of the hose.

MR. YOUNG: Mr. Chairman, I will reply to that. I might say that this cut is to illustrate the jaws for making the tensile test of the fibers in the duck. [Laughter.] It refers to paragraph 6, page 3, Tensile Strength of Duck. In that paragraph, at the top of page 4, you will see the figures referred to. It has no bearing at all as to the mounting of the hose upon the fittings. While that subject is up for discussion, I might say most of the committee feels it is an error to mount hose by machinery, as we believe a great many defects are started at the time of mounting by improper use of machinery.

MR. SCHROYER: Well, I brought up this subject, because I understand that in response to the inquiry made by the committee on the mounting of hose that a large majority of the roads were mounting hose by machinery. While I have not had the opportunity to read this report, I concluded, of course, that that is what these illustrations meant. I think it is wise to have it brought out here.

THE PRESIDENT: Gentlemen, I wish to interrupt the discussion for a moment to say that it will be necessary to close the ballot at 10:45, in order to give the tellers time to count the votes.

MR. GAINES: Mr. President, I would ask Mr. Young to tell us briefly just what changes have been introduced in the present

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proposed air-brake specification as against the one we had last year; just briefly outline the changes which have been made; also, the same in connection with the specifications for car axles; just briefly outline the variations between the old and new specifications.

MR. YOUNG: In the air-brake hose specification, the temperature at which tests shall be made is raised 15 deg. The elimination of the first sentence of Section 15, Inspection, paragraph (a). These are the only two changes in the specification. There is no change in the requirements as to the physical properties.

Due to questions which arose at the introduction of the 1913 specification, your committee had a large number of questions referred to it for decision. In our circular to you, prepared and sent out in December, we put a clause at the bottom of Section 5, under Tensile Strength, in order to clarify what was intended by the committee, in establishing a tensile strength clause. Last year, in the specification, which was new, and this was done with the idea that an upper limit should be placed on the strength of the material, in order to prevent, so far as possible, the stiffening of the hose under low temperature conditions, as a great deal of complaint had been made to the Association from the northern roads that at low temperatures the hose was practically impossible to uncouple. Your committee, therefore, put an upper strength clause in of 1200 lb. A further review of that, however, developed that upper strength was desirable in the material, providing an elongation corresponding to the increase in strength was found in the material, and therefore, in that circular, it became a part, practically, of the specification. The last sentence of that paragraph was included, which reads: "If the tensile strength in pounds per square inch is greater than that required, the sample may be accepted, providing the per cent increase in elongation is equal to or greater than the per cent increase in tensile strength in pounds per square inch above the maximum figure." Those are the only changes. In other words, they practically make no changes at all in the specifications as worded to-day.

On the axle specification the change made is the addition of

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the drop test for 6 by 11 axles. The distance between supports is 3 ft., and the height of a heavier tup is given. It was impossible to test these axles with the standard tup of 1640 lb. without increasing the height of the test leaders very materially. This the committee did not think was a wise procedure, and therefore increased the weight of the tup, in view of the fact that the American Railway Maintenance of Way Association was using a 2000-lb. tup, in order to standardize weights of tup. It may be possible that we will make a change in this recommendation, so as to have one weight of heavy tup for heavy class work, both for rails and axles, so as to simplify the testing apparatus at the works.

Another change in the specifications is a clearer defining of the checking analysis as compared with the old specification, which practically permitted the manufacturer to stand on his own test.

I have already referred to the lowering of the phosphorus from 0.07 to 0.05, and a slight change in carbon. The original carbon was 0.35 to 0.50. This is 0.38 to 0.52 per cent, practically the same range, but a slight variation to make it correspond with the standard specification of billets from which the axles are forged. The manganese requirement is the same.

The specification for axles has been revamped in the workmanship and finished clauses and inspection and rejection. The storing clause is the same. Permissible variations included, which defines the permissible variations used on the M. C. B. sheets; in other words, there is no change in the axle specification except the addition of the drop test, 6 by 11, and a tightening up of the chemical requirements as to phosphorus.

THE PRESIDENT: I understand Mr. Van Derbeck, representing one of the rubber manufacturers, is here, and if he would be willing to offer his views on these specifications, we would be glad to hear them. Mr. Van Derbeck.

MR. FRANK H. VAN DERBECK (Manager, Hewitt Rubber Co.): Mr. President and Members of the Association,—I do not feel that the courtesy of the floor should be extended to the manufacturers of air-brake hose without their accepting that privilege. I have listened with interest to the report of your

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committee, and as one of the manufacturers I desire to say that I think the report, with the amendments just proposed, decidedly improves the specifications. I believe that the railroads will secure better service from hose made to the 1913 specifications than to the 1905 specifications, because of the strictness of the former and the certainty that a better hose, containing more rubber, must be furnished. Your committee has shown great courtesy to the manufacturers, and I am not so sure that the manufacturers have coöperated with them to the extent which they desire, but it may be said that the manufacturers have coöperated to a certain extent. One thing, I think, remains yet to be done, and I believe your committee is endeavoring to have the manufacturers assist them in it, and that is, to provide more uniform methods of testing, so that the methods and the apparatus used by one road will be very uniform with that used by all the other roads, as well as by all the manufacturers.

I simply wish to make these statements from the manufacturers' standpoint, and to assure you that I appreciate the courtesy which has been extended to us. I am speaking only in behalf of my own company, the Hewitt Rubber Company, of Buffalo. [Applause.]

THE PRESIDENT: I am sure the members of this Association appreciate very much the views which Mr. Van Derbeck has expressed. As chairman of the original committee on 1913 Hose Specifications, I found it difficult to get the manufacturers to "come out of their shell" and tell us what they did think on the subject, and it is gratifying to know that at least one of the manufacturers has expressed approval of the work as finally adopted. The privilege of the floor is still open to other manufacturers, if there are any who would like to speak on the subject; we would certainly appreciate hearing their views. [No response.]

Is there any further discussion on the report of the committee? If not, the motion is to approve the report and submit it to letter ballot.

MR. GAINES: Mr. President, I would like to make an amendment to the original resolution. The original resolution did not provide for the continuance of this committee, and if the orig-

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inal mover will accept that amendment, I would like to have the motion amended in that way.

THE PRESIDENT: Mr. Young, will that be acceptable?

MR. YOUNG: Yes.

THE PRESIDENT: If there is no objection, that will be incorporated in the motion, that the committee be continued. All those in favor of this motion say "aye"; opposed, "no." It is carried.

MR. CRAWFORD: I would like to make a motion that this committee be made a standing committee. It seems to me that this kind of work is most necessary for this Association and that the Master Car Builders' Association should have their own specifications for all of the material that goes to make up a car. I move that this committee be made a standing committee.

Motion seconded.

THE PRESIDENT: It is moved and seconded that the Committee on Specifications and Tests for Materials be made a standing committee; any discussion? If not, all those in favor say "aye"; opposed "no." It is carried.

The next report is that on Car Construction. Mr. W. F. Kiesel, Jr., is chairman of the committee.

W. F. KIESEL, JR. (Penna. R. R.): The Committee on Car Construction sent Subject 1-A to the Secretary to be transmitted to the Arbitration Committee for action. The recommendation under that subject is that existing steel or steel underframe cars, which have less strength than specified below, should be classified with wooden cars, and subject to the same rules for combination defects. Area of center sills not less than 16 sq. in. Ratio of stress to end load not more than 0.09. The length of center or draft sill members between braces to be not more than 20d where "d" is the depth of the member, measured in the direction in which buckling might take place.

Passing over to Subject 1-B, page 3, center sills for new cars.

The committee desires to make an addition to paragraph 5, on page 4, making it read: "The attachments for the braces and the members to which they are attached must be sufficiently strong

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to realize the full bending strength of the braces with the strain acting 18 in. above the floor."

The report is as follows:

REPORT OF COMMITTEE ON CAR CONSTRUCTION.

To the Members:

SUBJECT 1-A.—CENTER SILLS FOR EXISTING CARS.

The report of 1913, covering minimum strength of center sills of existing steel and steel underframe cars, was submitted to letter ballot, but should have been referred to the Arbitration Committee. Your committee, therefore, under date of March 20, 1914, addressed the following letter to Mr. Jos. W. Taylor, Secretary, Master Car Builders' Association:

"With your letter of January 10, 1913, you sent to the Committee on Car Construction copy of letter from Mr. D. F. Crawford, dated November 23, 1912, stating that it had been considered at a meeting of the Arbitration Committee, held January 8, 1912, that if our work will indicate the necessity for any modification of Rule 43 the committee would be glad to be advised of same, and, if necessary, will meet our committee.

"Your letter stated further that it might be found desirable to establish two minimum sectional limits — one for existing equipment, and one for new equipment.

"The Committee on Car Construction went into this matter very thoroughly, and made a report to the Master Car Builders' Association in June, 1913. This report was submitted to letter ballot in error, as recommendation in the report was for an amendment to Rules of Interchange, and should have been submitted to the convention in that way, and not as the report of the committee.

"The Committee on Car Construction, in their meetings since June, 1913, have again gone over this matter very fully, and agree that it will be to the best interests of the Master Car Builders' Association to introduce figures for minimum strength of existing steel cars in the Rules of Interchange, modifying Rule 43 accordingly.

"We therefore request that you forward to the Arbitration Committee, as a recommendation of the Committee on Car Construction, the following amendment to Rule 43:

"Existing steel or steel underframe cars, which have less strength than specified below, should be classified with wooden cars, and subject to the same rules for combination defects.

"Area of center sills not less than 16 sq. in.

"Ratio of stress to end load not more than 0.09.

"The length of center or draft sill members between braces to be not more than 20 d where "d" is the depth of the member, measured in the direction in which buckling might take place.

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"To explain the above we would state, as follows:

"The basis of strength in rule given above is threefold. First, a minimum section area of center or draft sills; second, maximum ratio of stress to strain, and, third, maximum ratio of length to depth of unsupported members of underframe.

"The section area given should obtain throughout the length of the sills lying between points where impact takes place. If impact takes place between the coupler horn and end sill, the full length of the center sills must be considered. If, on the other hand, impact takes place between rear followers, the part of center sills between these followers should be considered, and the center sills from the rear followers to the end sill may be lighter. The rivet area holding the back follower stops to the center sills should not be less than 12 sq. in.

"In determining the ratio of stress to end strain, the distance between the neutral axis of any member of the car and the center line of strain should be taken as a lever arm, through which bending effect is added to direct tension or compression.

"A formula for the ratio of stress to end strain is $\frac{I}{A}$ plus $\frac{X}{SM}$, in which A represents area in sq. in., X represents lever arm in in., SM represents section modulus of section.

"The length of center or draft sill between adjacent tie plates or braces, or the length of any part of any center sill or draft sill between adjacent supports or braces, must not be more than 20 times the measurement across the section of member under consideration. The measurement across the section referred to must be taken whichever way the member is weaker, which, of course, will be the direction in which the member will buckle if overstrained. As an example: Center sills consisting of channels tied only at the top by floor plates, and having flanges 2½ in. wide, may have the bottom flanges braced only at intervals of 8 ft. According to the rule given above, these bottom flanges should have braces at intervals of not more than 20 times 2½ in., or 50 in. Such car will, therefore, require an additional brace for anchorage about half way between the existing anchorages."

SUBJECT 1-B.—CENTER SILLS FOR NEW CARS.

Your committee carefully reviewed the steel-car situation in order to formulate recommendations as a guide for new work.

To furnish maximum revenue returns, the money expended for first cost, repairs, and dead weight hauled should be a minimum.

It was suggested that two standards for center-sill area be adopted—one for cars in general service, and one for heavy service; but as both kinds will be hauled in the same trains, this is not practical.

Minimum center-sill areas, between points of impact, on existing cars,

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may vary up to 55 sq. in. Service experience demonstrates that the cars having minimum center-sill strength are crippled in acting as cushions for the stronger cars. This makes it desirable to aim at uniformity of center-sill strength for all cars in the train. Designs of cars which do not go into general service in interchange may be considered only from their own load-carrying standpoint, without regard to train strains; but those used in interchange must be considered from both standpoints. For the latter, your committee recommends the following as minimum design requirements to produce cars giving maximum returns for money expended:

Area of center sills: 24 sq. in., minimum.

Ratio of stress to end load: 0.06, maximum.

Length of center or draft sill members between braces: 20 d, maximum ("d" is the depth of the member, measured in the direction in which buckling might take place).

SUBJECT No. 2.—BOX-CAR END, DESIGN AND STRENGTH.

When existing box-car ends need renewal they should be reinforced between corner posts with the equivalent of two steel braces, each having a section modulus of 4, or more. These braces may be applied vertically, horizontally or diagonally.

New cars should have steel plate ends ¼ in. thick, reinforced between corner posts with the equivalent of either two vertical steel braces with a total section modulus of not less than 9; or one vertical and two diagonal steel braces with a total section modulus of not less than 10; or three horizontal steel braces with a total section modulus not less than 10.

New cars may have the following alternative arrangement: Three or more steel braces, two of which run diagonally, with a total section modulus of not less than 12½, and wood lining 1¾ in. thick.

To concentrate strength at a point near floor line on vertical center line of car, diagonal braces should extend from the center sills to the side plates, and not from the bottom corner to the ridge.

The attachments for the braces and the members to which they are attached must be sufficiently strong to realize the full strength of the braces.

Hardwood or yellow pine may be considered equivalent to the steel members, if the section modulus is four times as great.

Wooden posts and braces should be set in metal pockets not less than 1½ in. deep, and must be held in place by adequate tie rods.

Lining at car ends should be supported at intervals not greater than 30 times the thickness.

Two 4 by 3 in. Z bars, 12.4 lb. per ft., have a total section modulus of 9.34.

Two 5-in. I beams, 9.75 lb. per ft., have a total section modulus of 9.6.

Three 4-in. I beams, 9.5 lb. per ft., have a total section modulus of 10.2.

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Three 3-in. Z bars, 14.2 lb. per ft., have a total section modulus of 10.3.

Types of end similar to VanDorn ends, made of ¼-in. plate, or Murphy ends, with the lower half made of ¼-in. corrugated plate, and the upper half with ⅛-in. corrugated plate, may be substituted for those described.

SUBJECT No. 4.—CAR DOORS AND FASTENINGS.

In letters referred to your committee, attention is directed to non-uniformity of doors and fastenings, and ease with which some cars can be entered without breaking the seal. It was also stated that if car is equipped with a board roof only, this is partly removed and afterward replaced, and should there be a tin roof underneath, this is cut and bent back sufficiently for a man to enter. After pilferage is committed he returns through the opening, replaces the metal and boards, and an ordinary inspection does not detect how entrance was effected.

Attention has been directed to the large percentage of defective doors, which have to be cleated to hold them in proper position.

Your committee feels that one of the most important parts of the car-door proposition, at present, is to reinforce the doors and door fastenings on some existing box cars in the least expensive manner that will make them safe and serviceable. In many cases this does not require new doors, but only additional fittings or reinforcements. For this reason it is thought advisable to make one recommendation to cover the betterment of existing construction, and another to cover all new construction. On account of the patent situation, your committee does not feel that it is feasible to present full detailed designs of doors and fastenings without eliminating some of the best-known construction, and, therefore, prefers to present its recommendations in specification form, as follows:

1. Specification for reinforcing existing doors:

The necessary additional number of bottom door guides should be provided to make four on each side of the car—one adjacent to each door post, one in the middle of the doorway, and the other between the back door post and the open door stop, located approximately as shown on Revised Sheet M. C. B. 30, and similar in design, with particular reference to the height of lip, which should be 1¾ in. If the design of the door is such that the removal of the door guide next to the door post would permit the door to be pulled away from the car, then this door guide should be of such design that it can not be removed when the door is closed.

2. Doors should be reinforced against bulging by the equivalent of two 1½ by 1½ by ⅜ in. angles extending horizontally the full width of the door, one located approximately 12 in. from the top of the door, and the other approximately 12 in. from the bottom of the door, and fastened with ⅜-in carriage bolts.

3. The door-hasp fastener should be at least 24 in. long, fastened

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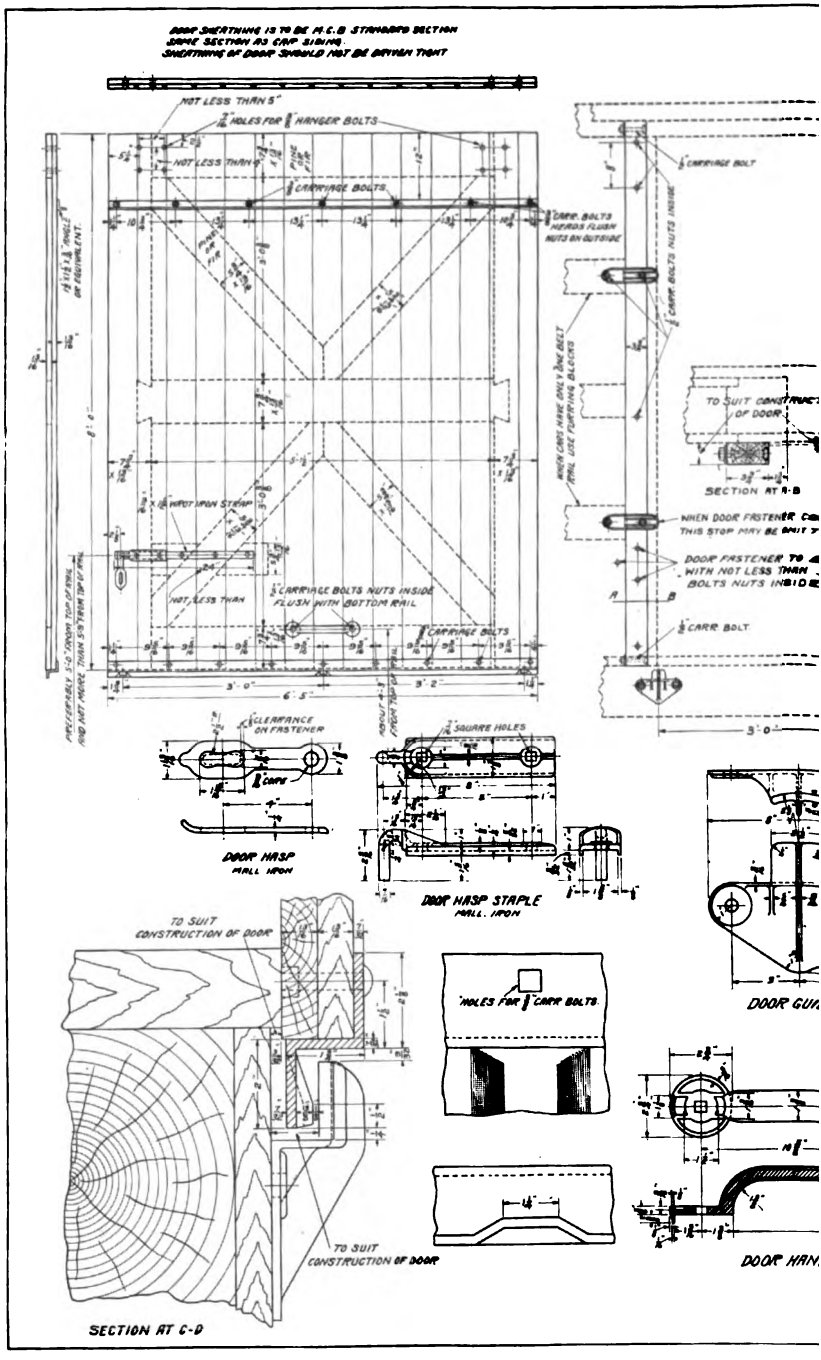

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with not less than five ⅜-in. bolts with the nuts on the inside of the door. The door-hasp fastener should be of such design that the hasp can not be removed without removing the bolts from the fastener.

4. The closed door stop should have two or more lips extending at least 1½ in. over the door to support the door against bulging outward. Where all-wood closed door stops are used, they should be strengthened against splitting, and should have at least two metal reinforcing brackets similar to closed door stop casting shown on Revised Sheet M. C. B. 30.

5. Open door stops, if of wood, should extend the full height of the door and be strengthened against splitting.

SPECIFICATIONS FOR COMPLETE NEW DOORS FOR EXISTING CARS OR FOR NEW CONSTRUCTION.

1. The upper door track should be continuous, and strong enough so that it will not sag, securely fastened to the car with ½-in. bolts, or ⅜-in. rivets not less than six in number, and so designed that it will continuously support the door against outward pressure independent of any action of the door hangers, and will also keep out rain and snow, proper flashing, if necessary, to be provided over the door track. The design of track and hangers should be such that when the door is being opened or closed it can not lift up and bind against the track.

2. Bottom door guides to have 1¾-in. lip, and to be four in number — one located adjacent to each door post, one in the middle of the doorway, and one between the back door post and the open door stop, located approximately as shown on Revised Sheet M. C. B. 30, and similar in design, with particular reference to the height of lip, which should be 1¾ in. If the design of the door is such that the removal of the door guide next to the open door post would permit the door to be pulled away from the car, then this door guide should be of such design that it can not be removed when the door is closed.

3. Metal open door stops are recommended, one or more in number, of design shown on Revised Sheet M. C. B. 30, securely bolted to the framing of the car with ½-in. bolts. If wood open door stop is used, it should extend the entire height of the door and be strengthened against splitting.

4. The back edge of the door and the back door post should be so constructed that when the door is closed and fastened it will be continuously supported from top to bottom against outward pressure, and will also be protected against leakage of rain or snow and admission of sparks.

5. Closed door stop to be preferably of metal, and to provide protection against leakage of rain or snow and admission of sparks. The closed door stop must also support the door against outward pressure, either continuously from top to bottom, or by the use of two or more lips projecting at least 1½ in. over the door, approximately as shown on Revised Sheet M. C. B. 30. If wooden closed door stops are used, they must be

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strengthened against splitting and must be provided with at least two metal closed door stops provided with lips to project over the door at least 1½ in. to support the door against bulging outward, as shown on Revised Sheet M. C. B. 30.

6. Wood doors should have preferably a metal frame, with a Z bar or its equivalent at the bottom, approximately as shown on Revised Sheet M. C. B. 30, the Z bar acting as a stiffener and also engaging with the bottom door guides. This construction or its equivalent permits the use of door guides which project a very short distance from the side of the car, and are, therefore, less subject to injury, particularly the door guide at the middle of the doorway.

7. Wooden frame doors, if used, should be at least as strong as that shown on Revised Sheet M. C. B. 30.

8. The door-hasp fastener should be at least 24 in. long, fastened with not less than five ⅜-in. bolts, with nuts on the inside of the door. The door-hasp fastener should be of such design that the hasp can not be removed without removing the bolts from the fastener.

9. Door-hanger bolts to be located not closer together than 4 in. one way, and 5 in. the other. Four ⅜-in. bolts are recommended.

It is understood that all of the above recommendations apply particularly to 6-ft. door openings of cars with single, outside-hung side doors, and in all cases where a particular construction is described or specific dimensions are given, their equivalents will be acceptable.

The changes of the proposed revision of Sheet M. C. B. 30, a drawing of which accompanies this report, are as follows:

GENERAL DRAWING OF DOOR.

Construction of door has been changed to show stiles extending full height of door.

Four holes for door-hanger bolts shown instead of three.

Seven-sixteenths-in. holes for door-hanger bolts shown instead of ½ in.

Horizontal spacing of door-hanger bolts changed from 6-in. centers to "not less than 5 in."

Vertical spacing of door-hanger bolts changed from 4 in. to "not less than 4 in."

Size of door-stiffener angle changed from 1¼ by 1¼ by ⅜ in. to 1½ by 1½ by ⅜ in.

The three No. 14 wood screws in center of door-stiffener angle changed to ⅜-in. carriage bolts.

Three-sixteenths by 1½ in. wrought-iron strap added to door-hasp fastener.

One-half-in. carriage bolt added to top and bottom of wooden closed door stop to prevent splitting.

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Note reading, "When door fastener contains lip, this stop may be omitted," added for lower malleable-iron closed door stop.

Dimension 2 in., showing thickness of closed door stop, and dimension ¼ in., showing the amount the floor projects beyond the sheathing, both changed to "to suit construction of door."

Note reading, "There must be not less than two bottom door-guide brackets supporting the door in any position, and not less than three bottom door-guide brackets supporting the door in the closed position," removed.

Note reading, "When cars are provided with two belt rails, door stops are to be located at the rails," changed to read, "If two open door stops are used on cars provided with two belt rails, door stops are to be located at the rails."

Note reading, "If construction of door is such that the removal of this guide will permit the door to be sprung away from the car, some form of burglar-proof guide should be applied at this point," added to the third bottom door guide from closed door stop.

Furring for door-hasp staple fastener added.

SECTION C-D.

Dimension of ¼ in., showing the amount the floor projects beyond the sheathing, changed to "To suit construction of door."

Length of bottom vertical flange of Z bar door stiffener changed from 1¼ in. to 2 in.

Dimension of 1⅛ in., showing distance from face of car to lip of door guide, changed to "To suit construction of door."

Round holes in top flange of Z bar door stiffener changed to square.

DOOR GUIDE.

Height of lip changed from 1 in. to 1¾ in.

Dimension of 1⅛ in. from back of guide to inside of lip changed to "To suit construction of door."

Dowel omitted from door guide.

Design of lip changed from 1¾-in. radius to square top with ¼ in. radius at each corner.

Distance from center of bolt hole to bottom of guide changed from 2 in. to 3 in.

CLOSED DOOR STOP.

Dimension of 2 in. from back stop to lip changed to "To suit construction of door."

OPEN DOOR STOP.

Dimension of 2 in. from back of stop to lip changed to "To suit construction of door."

DOOR-HASP STAPLE.

Design changed so that staple will fit over ⅛ by 1½ in. staple fastener. Number of bolts reduced from four to two, and staple extended.

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SUBJECT No. 5.—PLACARD BOARDS FOR BOX CARS.

As many box cars recently built have steel ends, and some have complete steel sheathing, it becomes necessary to provide placard boards for the various kinds of cards used, including cards for explosive shipments.

Your committee recommends that the space available for placards should be not less than 16 in. by 24 in. on each end and each side of car.

Box cars with sufficient space available on wood siding, or exposed lining, should have a rectangular space, painted black, on each side and each end. Other box cars should be provided with placard boards, made of soft wood, not less than 16 by 24 by 1 in. The vertical edge should be reinforced with metal protection, and the bolts fastening the boards to the car should be not less than six in number, and should pass through the metal reinforcing pieces, three through each. The boards may be made of more than one piece, and should then be tongued and grooved. The distance from the floor line of car to bottom of board should be not less than 4 ft. 6 in.

Routing-card boards, preferably the same size as the placard boards described, should be placed on the side of the car, as near as possible to the door seal.

SUBJECT No. 6.—DRAFT GEAR.

This subject was referred to your committee with letter relating that there are many failures due to weak draft gears, creating unnecessary delays, transfer of loads, excessive cost of repairs, accidents and wrecks. The situation in connection with wooden cars was described as serious.

Your committee recommends that cars should not be accepted in interchange unless equipped with draft gears and attachments having strength or capacity equivalent to or greater than the following requirements:

The section area of draft timbers located underneath the center sills must be not less than 32 sq. in. Each draft timber must be not less than 4 in. wide, nor less than 6 in. deep, and must be held securely to the center sills and end sills by not less than seven ⅞-in. bolts, or six 1-in. bolts.

Draft timbers extending through or beyond the bolsters must be secured to the center sills by two or more additional bolts.

Draft-gear yokes must be not less than 4 in. wide by 1 in. thick, made of wrought iron or steel, and attached to the coupler side with not less than two 1⅛-in. rivets.

Draft springs must have a capacity of at least 19,000 lb.

Should cars require repairs to bring them up to these minimum requirements, the following recommendations are offered:

Draft timbers should butt against the body bolsters and shoulder against the end sills, both of which in turn should be well secured against shifting from either pulling or buffing strains.

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Draft-gear stops should, whenever possible, be gained into the draft timber or heeled on the end sills.

Front and back draft-gear stops may be made in one piece, or may be secured to a metal plate not less than $\frac{5}{8}$ in. thick, or made separate. Each stop (counting two stops riveted to a $\frac{5}{8}$-in. plate as one piece) must be secured to the draft sill by not less than six $\frac{3}{4}$-in. bolts or their equivalent.

The center sills should be strengthend by the use of a filling or packing piece secured between the same, butting against the end sill and extending beyond the body bolster toward the center of the car, a distance at least as much as between the bolster and end sill.

The present M. C. B. coupler side clearance of $2\frac{1}{2}$ in. should also be provided.

SUBJECT No. 7.—STOCK-CAR DOORS.

It was suggested that a design of door be submitted for Recommended Practice as a guide for application of such doors.

Your committee has agreed that at the present time it would not be policy to introduce such design as Recommended Practice, but were of the opinion that it might be well to formulate some rules governing stock-car door construction. The subject, however, is of such a nature that more time than that available before the June convention must be taken in order to properly formulate such rules.

NOTE.—In connection with the discussions at the various meetings held by your committee, the suggestion was made that the committee develop a box-car design, not necessarily as Recommended Practice, but primarily as a guide for box-car construction, and as a basis for door and other designs, which then can be made complete in detail, showing actual application to a car design. It was further suggested that if such car design be made complete in detail, incorporating Recommended Practice, it would be used by some of the smaller roads who do not prefer to make designs of their own, thus tending toward a more uniform type of car for smaller roads.

Respectfully submitted,

W. F. KIESEL, JR., Chairman,
A. R. AYERS,
S. G. THOMSON,
C. E. FULLER,
H. H. VAUGHAN,
E. O. CHENOWITH,
J. C. FRITTS,
T. M. RAMSDELL,
C. L. MEISTER,

Committee.

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THE PRESIDENT: Before we take up the discussion on the report just presented, I will announce that the appointed time for closing the polls has arrived, and the tellers will collect the ballots and turn them over to Mr. LaMar, the principal member of the Committee of Tellers, and the other members of the Committee of Tellers will join him in counting the ballots.

I understand that Mr. Vaughan, a member of the committee, has some further suggestions and recommendations to make in connection with the report of this committee. We will be glad to hear from Mr. Vaughan before the general discussion is started.

MR. VAUGHAN: I advised Mr. Kiesel that I realized it was unfair at the time the report was written up to interpose objections, but in some respects I did not consider the report satisfactory. My objections are as follows:

Subject 1-A. Center Sills for Existing Cars.— While I consider the recommendations substantially correct, it will be necessary to present them in a form in which they can be practically applied, such as stenciling cars " M. C. B. Steel Sill," or so defining the requirements that they may be understood by inspectors. I also consider that the extent to which the body of the car may be considered as supporting the sills against vertical bending should be clearly defined.

Subject 1-B.— I can not subscribe to this recommendation. I am inclined to agree that the two standards I recommend would not be practical, and therefore consider that the decision must be left to each road individually. From experience gained with 30,000 cars, having 19.8 sq. in. of center sill area, I do not consider results would warrant this area being increased for the class of traffic in which these cars are usually employed, while roads on which exceedingly heavy trains are handled may find it desirable to employ heavier construction at the expense of heavier dead weight. Until time arrives at which interchange requirements demand a minimum strength of center sill, it therefore appears useless to specify the dimension for new cars.

Subject No. 2.— End construction for new cars with two vertical 4-in. Z bars and 1¾ in. wood end lining has proved satisfactory, and is ample as a minimum requirement. I would

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therefore recommend that paragraph 2 be amended to read: "New steel cars should have steel plate ends ¼ in. thick, or wood-lined ends 1¾ in. thick," etc., and that paragraph 3 be omitted.

Paragraph 5 should be revised to specify bending strength at a definite height above floor line. It is unnecessary to provide end fastenings which are equal to the shearing strength of the braces.

I do not consider it desirable to specify patented type of ends, as these could better be provided for by saying that special design of ends should be equal in strength.

It does not seem to be reasonable to permit the use of cars in interchange traffic unless they come up to these requirements.

I consider on roads using the deadwood it is reasonable to use a bolt through the deadwood as recommended.

Subject 4, Item 2.— Angles should be located not over 12 in. from top and bottom of door to provide for construction in which these angles or their equivalent is used as part of door frames. They should be used with ⅜-in. carriage bolts or ¼-in. rivets.

Subject 6.— Paragraph 2 should permit cars to be transshipped at option of receiving road in place of forbidding their acceptance in interchange.

Paragraph 3 should be changed to read "and must be held securely to the center sills and sills and deadwood by not less than six ⅞-in. bolts or five 1-in. bolts.

Size of draft springs should be specified in place of capacity.

I consider that a clause should be drafted specifying the condition of draft gear and sills, as this is more important than the dimensions.

I do not consider that recommendations for repairs are advisable, as it is not apparent what object would be attained by them.

THE PRESIDENT: You have heard the report of the committee, and I understand Mr. Vaughan's statement is in the nature of a minority report, supplemental to, and somewhat varying from, the main report.

MR. JAMES COLEMAN (Grand Trunk Ry.): There are some railroads which have a large number of cars with less area than required by this report, and I do not think it is fair to adopt these recommendations because they would almost cripple some

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of the railroads, which have a large number of these cars in service.

I move that the report be received, with the amendments suggested by Mr. Vaughan.

Seconded.

THE PRESIDENT: You have heard the motion. I think that is something which should be pretty fully discussed. It is an important subject, and there are certainly many men here who have opinions on it. We would be glad to hear them.

MR. DEVOY: I understand that the motion now is to receive the report —

MR. COLEMAN: Embodying Mr. Vaughan's suggestions —

MR. DEVOY: For what purpose?

THE PRESIDENT: As I understand the motion, it calls for an acceptance of the report of the committee, and the adoption of those parts of the report that do not disagree with Mr. Vaughan's minority report, and its substitution of the minority report for those parts in which they do disagree. Is that correct, Mr. Coleman?

MR. COLEMAN: Yes, that is right.

MR. DEVOY: My reason for asking that question is because of the possibility that parts, or the whole, of this report might be submitted to letter ballot. In figuring the stresses, or attempting to figure the stresses, on some of our older cars, before we voted last year on this same question, we found it impossible to tie a steel brace which had a section modulus of four or more to the end of the car, and at the same time maintain the desired length, or the length which the car called for, and which the traffic department insisted on being paid for. On the other hand, we found it impossible to go to the outside on account of the safety requirements for distance between cars. If this report were taken literally and were applied to existing box car ends, I think it will be found almost impossible to comply entirely with the requirements. We could not vote intelligently on the subject last year, with reference to the older cars, and I do not think it will be possible for us to do so at this time.

I agree with Mr. Coleman that it would retire more cars than

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any other matter which might be brought before this Association, and which was attempted to be adopted as a Standard. I do not think we are quite ready to take that action.

MR. VAUGHAN: Nothing was further from my mind than any such suggestion as Mr. Coleman made. I do not think that suggestion, Mr. Coleman, would really bring about action to the best advantage. I think the report of the committee should be received, and I would be very glad if the Association would also receive my report as a minority report.

The report as a whole demands varied action. As to some portions, such as the portion relating to the minimum strength of draft gear on cars in interchange, that portion should be referred to the Arbitration Committee for their consideration. Another portion of the report, the strength of center sills on news cars, may be submitted to letter ballot as Recommended Practice. I do not think any action should be taken on the report as a whole. The matter should be left open for discussion and treated, if desired, piece by piece.

MR. KIESEL: Referring to Mr. DeVoy's remarks, it will not be necessary to change existing cars in order to conform to these requirements. We have indicated here that such ends as the Van Dorn and Murphy can be applied to meet the requirements.

Furthermore, if these matters are made Recommended Practice, it is not absolutely necessary for roads to immediately retire or change the cars. It is an indication of what strength is required in interchange in order to avoid excessive damages. If these various recommendations become Recommended Practice, it may be years before they become Standard, but adopting these recommendations as Recommended Practice will have the effect that designers will have a basis on which to design future cars.

For that reason I think it would be well to have this part of the report, Subject 1-b, considered as it deserves to be considered, as representing a basis for design of new cars. Most of the large roads now build cars with more center sill area and greater strength for the ends of the cars, and if more of the roads would conform to this practice I think there would be very much less necessity for repairs to cars.

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As Mr. Vaughan says, some of these matters, those relating to existing cars, should be referred to the Arbitration Committee, and the others, those relating to new cars, should be voted on for Recommended Practice.

MR. COLEMAN: The chairman of the committee did not refer to all the cars now in service, and that was my view in making that motion. It would be disastrous to many railroads that now have cars in service with section area less than that described in the report of the committee, namely, a minimum of 24 sq. in. and a maximum of 55 sq. in. Many of the roads have less area than 24 sq. in. as the area of the center sills. If the committee refers to new cars to be constructed in the future, and not to cars now in service, it makes a different view of the matter.

MR. SMITH: I regret that the committee did not make a progress report and ask to be continued. It seems to me that this is a report which should be considered in that light.

I did not recollect, when I first arose to speak, that this is a standing committee. I would like to have the matter considered in such shape that it can be received as a progress report; as a matter of information and guidance for new designs of cars and for reinforcing existing cars, and not bring the matter to definite action by the convention at this time. Conditions are changing, and I do not feel that any one should be tied up by this report. There is, as you know, the question of the retirement of cars of certain capacity, as I recollect it, based largely on the strengthening of draft gears.

The first recommendation under Subject 6, Draft Gear, does not seem to me to go far enough. I therefore feel that the motion should be so changed as to lay the matter over for another year and have further investigation made into the subject and further advice from the committee. It seems to me that the matter would then be in more desirable shape for us to take positive action on it than it is at present.

MR. HENNESSEY: I believe this report should be one of progress, as the roads in general are not prepared to make many radical changes. Another reason is that there are a great many of the old cars, which in the very near future will be taken out of service anyway. Of course, I understand that the recommenda-

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tions are to be submitted for approval only as Recommended Practice, and it will not compel the roads to make these changes, but I do not think there should be anything in the report which the average inspector can not figure out, such as the area and stresses, and similar matters. Consequently, I believe that this report should be received simply as a report of progress.

MR. KIESEL: I think I can answer all three — Mr. Coleman, Mr. Smith and Mr. Hennessey — in regard to Subject 1-B. If they will read the first paragraph they will find the following: "Your committee carefully reviewed the steel car situation in order to formulate recommendations *as a guide for new work.*" You will note, therefore, that this does not refer to any existing cars, but is intended merely as a guide for new work.

In regard to what Mr. Hennessey states, that a car inspector can not figure the strength of underframes, the area and stresses, etc., the same situation came up in connection with tank cars. At that time it was necessary to do something with tank cars, and it was covered quite fully by each road referring the designs to their mechanical engineers for advice as to whether such-and-such construction passes the requirements or not, and the same thing would have to be done for freight cars.

It is impossible to describe every detail design that is covered by a certain requirement, so in order to clear up this matter, I would suggest that you take up each of these subjects, one after the other, and determine what to do.

I would therefore move that Subject No. 1-B be referred to letter ballot for adoption as Recommended Practice.

THE PRESIDENT: Do you make that as an amendment to the motion which is now pending before the house?

MR. KIESEL: I wanted to ask whether, in view of the explanation I gave, the gentleman who made the former motion would not be willing to withdraw it, as he was under the impression that this was for old cars, and, as I have explained, Subject No. 1-B is intended as a guide for new work. On that basis, do you want to press your matter, Mr. Coleman?

MR. COLEMAN: This is such an important matter that I would be glad to withdraw my motion, with the approval of the seconder.

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MR. SCHROYER: I agree to withdraw the motion.

THE PRESIDENT: Mr. Kiesel, will you put your motion so that the stenographer can get it?

W. F. KIESEL: I make the motion that Subject No. 1-B be submitted for letter ballot for adoption as Recommended Practice.

Motion seconded.

MR. CLARK: It seems to me that this whole subject is too important a one to take action on at the present time; the report has not been in the hands of the members long enough to enable them to fully understand what the recommendations of the committee are. There are a good many of these recommendations that involve research and calculation on the part of the members, and it seems to me that we are not prepared to discuss these subjects fully at this time. I think that it would be advisable, if possible, to have the report so handled as to constitute, in effect, a progress report, as suggested by Mr. Coleman, Mr. Smith and Mr. Hennessey. I do not think we are in a position to act on this report at all this morning.

MR. CRAWFORD: I look on the submission of any of the deductions made by the committees of this Association to letter ballot for adoption as Recommended Practice as being in the nature of a progress report. The mere fact that the Association approves it only as Recommended Practice would indicate to me, at least, that the subject was not settled. By adopting a suggestion as Recommended Practice we would then have in our Proceedings the practice which the majority of the members of the Association approve. In approving as a Recommended Practice they do not say that they will change all their cars, or say they will build all their new cars according to the Recommended Practice, but it is a matter of reaching an agreement and this is a good way to do it, with the light we now have. The Recommended Practice can be changed the next year, and if necessary the year following, and after awhile we can do, as we have done for many years past, advance this Recommended Practice to Standard.

We could keep on making progress reports for many years

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and never reach a conclusion. If this matter is submitted to letter ballot for Recommended Practice, and it is rejected, it will show that the work of the committee is not satisfactory and will have to be done over again. If the matter is submitted to letter ballot for adoption for Recommended Practice, and it is accepted, it shows to the members of the Association that the majority of the members agree that this is a pretty good way to do it.

In my opinion, it would be a mistake to refer this report back to the committee, and have the report now submitted received merely as a report of progress, rather than to give the members of the Association an opportunity of considering the report in detail, which its submission to letter ballot would do. That will give them an opportunity to express their views.

MR. THOMSON: I would say, as a member of the committee, that we would like a discussion of each one of these subjects right on the floor now, if we have time. It may be difficult, as one of the speakers has stated, to absorb the contents of the report of the committee as it is read at the convention, if you have not seen it before, but the committee has gone through the work carefully, they have differed among themselves and changed their own ideas in regard to various features in the report, but the members of the committee have a comparatively limited amount of experience as compared with the experience of all of the members of the Association. I do not know of any better place than right here on the floor of this convention to talk this matter over. That is what this Association is for. We should take up each one of these items separately and discuss it. You can then make whatever disposition you want of them; have them submitted to letter ballot, or discard them separately. Such a discussion as I have intimated would give your standing committee more information than they have had during the last year in making a further report on this subject.

There has been some criticism of things presented in the report, and we would like to have a lot more criticism, as it will enable us to improve our work. There are many important subjects, and if we had time this morning to take up, briefly, each item — not attempting to discuss all the items at the same time — we will be able to get somewhere, rather than try to discuss the report by skipping from one subject to another.

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MR. SCHROYER: I think in the last paragraph of the report, in the note, you will find the gist of the whole thing. It says: "It was further suggested that if such car design be made complete in detail, incorporating Recommended Practice, it would be used by some of the smaller roads who do not prefer to make designs of their own, thus tending toward a more uniform type of car for smaller roads."

I can see no objection anywhere to referring this matter to letter ballot for adoption for Recommended Practice. I might say, in this connection, I do not see anything at all in this report that Mr. Kiesel's road is doing. I have never known Mr. Kiesel's road to do anything that was recommended in our committee reports — what was recommended was usually already being done on Mr. Kiesel's road. I think the best thing we can do is to submit this matter to letter ballot and give our members a chance to say "Yes" or "No." It is undoubtedly a good zero mark to work from in the design of the cars. It is a good thing for the roads that do not go into these things as Mr. Kiesel's road does.

MR. BRAZIER: I want to support what Mr. Thomson has just said. What do we come to these conventions for if it is not for educational purposes and to improve ourselves and improve the condition of equipments? If we do not discuss the reports we might as well stay at home. The committee has told a lot of truths about doors, door trimmings. It is a disgrace to the car departments of the country the way in which the average railroad is repairing door and door stops. Look at the wooden door stops which are being put on, without being reinforced, a little door fastening with only a ⅜-in. bolt in it. You may find some of these on our cars. If you are repairing them, repair them right, send in your bills and they will be honored. You might as well throw your money away which you spend in putting on these wooden door stops, unless you reinforce them to keep them from splitting.

I think the committee has done something which is very worthy in the report which they have submitted. Let us submit it to letter ballot, and give our members a chance to consider the subjects embraced in the report.

I should like at this time to submit for the records the letter

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which I read yesterday, to let the presidents know what is being done in our Association.

I want to again congratulate the committee on having done something of value, and I say to you carmen, when you go home repair your cars, the car doors and all the fixtures in a substantial manner.

THE PRESIDENT: If there is no objection, we will ask the Secretary to include, as part of this discussion, the letter which Mr. Brazier read yesterday; it is not necessary to repeat it, as you have all heard it read.

The letter follows:

THE ATCHISON, TOPEKA & SANTA FE RAILWAY SYSTEM.
PRESIDENT'S OFFICE.

CHICAGO, May 27, 1914.

Mr. Fairfax Harrison, President, Southern Railway, Washington, D. C.:
Mr. Samuel Rea, President, Penna. R. R. System, Philadelphia, Pa.:
Mr. A. H. Smith, President, New York Central Lines, New York City:
Mr. J. Kruttschnitt, Chairman Executive Committee, Southern Pacific Co., 165 Broadway, New York City:
Mr. Darius Miller, President, C. B. & Q. R. R. Co., Chicago, Ill.:
Mr. Howard Elliott, Chairman, N. Y. N. H. & H. R. R., Boston, Mass.:

DEAR SIRS,— At the recent and last meeting of the American Railway Association a resolution looking to the adoption of a standard freight car was discussed and a committee was appointed to consider the subject.

As the chairman of the committee, I am addressing you as one of its members with a view to obtaining your opinion on the subject and the extent of your interest therein.

In order that there may be a text upon which to base discussion, I may perhaps be pardoned for expressing some of my own views on the importance of the subject and the possible methods of solution.

1st. Each Master Car Builder holds opinions more or less, amounting to deep conviction on the subject of the best all-around car — he may be exactly correct as to his own individual needs, but he is likely to forget that in these days his cars go everywhere, and it may be that the major part of their service is on lines other than his own. The result is that any road handling and being obliged to repair foreign cars is obliged to carry an enormous stock of repair parts, in many cases only very slightly varying each from the other, yet sufficient to make it impossible to interchange. Estimates as to loss of interest on the cost of such parts is impossible, but must be a large sum.

2d. The ideas of car builders vary widely on the matter of weight, of strength, and of safety. One road sacrifices everything to lightness or

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absence of tare weight; another is determined on the maximum of strength almost regardless of weight; one road believes that the best car that can be built is the cheapest in the end; and another, either from choice or from necessity, builds as cheaply as possible, even though he may realize that his car may have but short life and may spend most of that life in the repair yard. Each of us under existing rules pays as much in the way of per diem on a cheaply built or decrepit car, the use of which is a menace to the safety of life and property, as he pays for a first-class car.

3d. There is constant pressure on the part of shippers of light and bulky articles for a car of a size permitting the shipment of the maximum amount that can be loaded — competition has been responsible for the building of some cars so large as to be positively unsafe for use in some sections of the country. On the other hand, the private ownership of cars has resulted in the building of many cars with reference to the most convenient commercial sales unit and with no regard for the economy of railroad service. Thus we have oil cars of widely varying capacity, yet pay the same sum for the use of each, though one may carry twice as much as the other.

These are only a few of the inconsistencies and absurdities that have grown upon us, and the wonder is that there are not more, considering the rapidity of our growth.

As a first step toward uniformity, it has seemed to me that we should attack the type of car which is most nearly universal — which is used for substantially the same purposes all over the country — which has no great variation in size, but which has hundreds of useless and some almost frivolous differences in details which should be eradicated.

Let no one deceive himself with the idea that this will be an easy task — each of you will find his subordinates wedded to ideas that other men in the same lines and presumably equally well posted will pronounce absurd, or, at least, mistaken. A standard box car, if it is ever attained, will not altogether please anybody, and those who enter a movement having for its object a standard must be prepared to surrender some of their theories. The only question to be answered is whether anybody can afford to surrender the advantages of uniformity for the sake of preserving his hobbies, or whether he is justified in holding on to the latter at the expense of his stockholders.

I have not touched as yet on the advantages in manufacturing and buying which would result from a standard car. A builder could carry at all times a stock of seasoned material from which he could turn out finished cars on short notice, whereas under existing conditions he can carry little because each road demands specialties which are not essential, but which vary with the opinions or whims of each builder.

For the consideration of the committee I suggest that it begin by asking the presidents of the more important roads in the country to issue

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mandatory orders to the proper subordinate officials to go into early conference on this subject and not to abandon such conference until the points upon which agreement can not be reached be tabulated in detail; that they invite the principal car manufacturers of the country to attend and join in such conference, and that they be requested to report to this committee their findings not later than a certain date, say October 1, next.

This suggestion is presented for discussion and with the idea that its adoption or the adoption of some similar idea may obviate the necessity of a meeting. Your early attention, with comments, is invited.

Yours truly,

(Signed) E. P. RIPLEY.

P. S.— Question has been raised whether it is worth while to attempt to make the invitation to a joint meeting as above proposed universal, and the consensus of opinion seems to be that it would be wise to confine it to railroads owning a certain number of cars, say possibly 40,000 as a minimum. Comment on this question is also solicited.— E. P. R.

THE PRESIDENT: The motion as it stands, as I understand it, is to refer Subject 1-B to letter ballot for adoption as Recommended Practice.

MR. DEVOY: Three or four men from the engineering departments were put on this work, and to be perfectly fair to the committee, I do not think there is an engineer in the country who can find any fault with what they have done. I am willing to vote in favor of the motion that this be submitted to letter ballot for Recommended Practice, or anything else, except the first two lines under 1-B, as follows: "Your committee carefully reviewed the steel car situation in order to formulate recommendations as a guide for new work." I spoke a short time ago about the older cars. I think we should take some action on this matter at this meeting.

MR. VAUGHAN: Before the question is put, I should like to make my position perfectly clear on this matter. I believe I am in a hopeless minority on it. It may be that referring this report to letter ballot for adoption as Recommended Practice will make a progress report of it — shelve it for the time — it really accomplishes that object, but it also does something more: It puts the stamp of approval of the Association on certain required limits for new cars, and any road that builds cars which do not come up to that minimum is more or less subject to criticism.

The point which I have in mind, and have had in mind in my

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communications with the committee, is whether this minimum is really desirable for all the cars built in this country. We do not consider it is. I have recorded in brief form in my letter the fact that four years' experience with cars having two 15-in. channel center sills, properly reinforced at the bolster, but without a continuous cover plate, have given excellent results in service, and they have not sustained sufficient damage in interchange service to justify us in adding 500 lb. of weight. I have figured that 500 lb. of added weight is $6 per annum as an added cost for pulling the car around, and I do not want to add that cost unless it is necessary, and as I say, I can not see that it is at the present time.

That is the whole point at issue between Mr. Kiesel and some other members of the committee and myself.

If the Association should adopt 24 in. as Recommended Practice it might then be advanced to Standard, and I do not feel that the recommendation is a necessity at the present time.

MR. CHAMBERS: I would take issue a little with Mr. Vaughan as to the matter of cars in service for four years. I do not think that is sufficient time in which to decide whether a car is strong enough. During that time the sills have not commenced to deteriorate, but during the next four years there might be considerable weakness displayed in the sills.

MR. THOMSON: I approve of what Mr. Chambers has just said, with regard to the point which Mr. Vaughan raised. I think we should build our cars for ten or twenty years. We have threshed this matter over in the committee for two years, and have come to the conclusion that 24 in. is the minimum for the area of the center sill.

MR. SCHROYER: What shape was it to be?

MR. THOMSON: We recommend 24 sq. in. center sills for new work, not for old work, or existing work, and that is, as I have said, very small, considering the buckling and shocks, and the heavy locomotives and cars which are in service to-day with heavy loads and long trains.

Many roads are building new equipment with the center sills 35 in., and as high as 40 in. If we are building car for ten or twenty years, we should think seriously of that 500 lb. Mr.

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Vaughan speaks of. The car must either carry its load and stand the abuse or it will be in the shop. I think we should give 24 sq. in. to the area of the center sill in order to keep them out of the shop.

MR. GAINES: I quite agree with the last two or three speakers. I believe we should reach a good, solid, substantial, definite minimum for the center sill stresses. It has been my experience with our own cars, and with other cars which have come to our road, that as they get older they deteriorate. They lose a certain amount in the strength of the metal, especially in the coal cars and similar cars, by rusting, and you do not have the same section you started out with. We have had a number of cars which only had a 15-in. channel for the center sills with which we have had a lot of trouble, especially cars from neighboring lines. In some cases we could not keep the cars in service on account of not having cover plates.

I believe in view of the work which the committee has done and the thorough investigation which they have made, that what they have presented is a reasonable limit and we should let it go to letter ballot for Recommended Practice.

MR. FULLER: In reference to statement that to obtain the desired center sill area will necessitate increasing the weight of cars, I can speak authoritatively in stating that notwithstanding we build our cars with the desired center sill area we do not increase the weight of our cars 500 lb. thereby, even though we are among the builders of the lightest weight cars in the country to-day, without sacrificing strength. By judicious designing there is no difficulty in building light weight cars, providing the strength is properly distributed, and we feel that strength is certainly necessary in the center sills, which are the backbone of the car. Even though the Association should decide on a lower area, our people would not think of decreasing the center sill area to less than 24 in. on any of our cars, and at some future time we will probably raise this figure.

MR. PRATT: I have just been figuring on the amount of revenue for these cars on the new per diem basis, and you will probably recognize that it is $164.25. The new per diem rules have not been in force long enough to arrive at the full effect, but the apparent

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effect is that some of the smaller roads — I have in mind a couple of them, which have no drafting force or mechanical engineers whatever — which have during the past year bought several thousand new cars, and it seems to me that the action which appears to be the opinion of the majority of speakers, namely, that this Association should have a Recommended Practice to serve as a pointer to such smaller roads is a good idea. I believe the tendency is that there is a good revenue in building new cars under the present per diem for a small road which will have these cars off its lines a great deal of the time.

MR. SMITH: I will add as a matter of information in connection with what Mr. Vaughan has said about four years' experience with 15-in. center channels, without cover plates, that we have several thousand box cars with 15-in. center channels, with covered plates. These cars have been in service probably an average of six years. In our efforts to save weight we did not run the cover plates through or beyond the bolsters. We are now finding these center sills cracking just ahead of the end of the cover plate. Clearly it would have been wiser in our design if we had extended the cover plate and carried it through or beyond the bolster.

MR. TATUM: I feel as though I should like to hand some bouquets around this morning. I will offer one to our friend, Mr. Brazier. He seems to be always on the right track when it comes to strengthening old car equipment and building new car equipment. He is always with the fellow on the hot firing-line who is in trouble, and he is always ready to offer assistance. He is offering it now.

This committee has done some very valuable work; they have made a suggestion or recommendation to this Association that we should have a Recommended Practice that might guide us in building new equipment or repairing old equipment.

The presidents of the railroads, as Mr. Brazier has said, think that we should have a standard box car. If we should have a standard box car, let us have standard methods of repairing them.

The large railroads of this country have built heavy equipment — they have heavy train service. The smaller roads have no need for the same strength of equipment that the heavy roads

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have, but the same car built for the light railroad service goes in service on the railroad where the heavy service exists. That car must be strong enough to stand the service on that road which is required of it. We can not afford to have them break down and fill our shop tracks. The new M. C. B. rules will not permit us, as heretofore, to send our cars home from all points over the country, and for that reason the cars will be tied up in our shops if they are not made strong enough to stand our service.

Our company, which has spent a lot of money, as many other roads have done, in building good cars, will have to pay a per diem on the cars of the roads which build the weaker type of cars, which are used in interchange service.

I think the proper thing for this Association to do is to adopt the recommendation of the committee and also the recommendation Mr. Brazier has made. The time is here; it is not coming. We must have good repairs and substantial repairs; and we must have good cars, cars that will remain in service.

MR. THOMSON: I would emphasize a point which Mr. Pratt brought out. If this recommendation does not do anything else, it protects railroads from other railroads or individuals that buy cars without specifications or drawings from a car company, in which case the car builder does not care much about the question of repairs. They build cars to sell. They build them with light center sills, and we have to pay a per diem for them while in the shop. As I said, if this report does not do anything else than help the man who can not supervise the manufacture of his own cars, it will be a good thing. I would like to see this Section 1-B go through, and in order to get action on it I call for the question on the motion to submit 1-B to letter ballot for adoption as Recommended Practice.

THE PRESIDENT: All in favor of the motion to submit Section 1-B, "Center Sills for New Cars," to letter ballot, say "aye"; contrary, "no." The motion is carried.

MR. KIESEL: I make a motion that, with regard to Subject No. 2, the part referring to existing box cars be referred to the Arbitration Committee, and the remainder of it, which refers

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to new cars, be referred to letter ballot as Recommended Practice.

Motion seconded.

THE PRESIDENT: The motion is that part of Subject No. 2 be referred to the Arbitration Committee for their consideration, and the remainder to be submitted to the members by letter ballot for adoption as Recommended Practice. All those in favor say "aye"; contrary, "no." The motion is carried.

MR. KIESEL: I make the same motion with regard to Subject No. 4, part of which is on page 4 and the balance on page 5, that the specification for reinforcing existing doors be referred to the Arbitration Committee, and that the specification for complete new doors for existing cars or for new construction be referred to letter ballot for adoption as Recommended Practice.

MR. VAUGHAN: I think they should all be referred to letter ballot for adoption as Recommended Practice. I can not see the necessity of referring specifications for reinforcing existing doors to the Arbitration Committee.

MR. KIESEL: As existing cars may have to be changed in order to meet these conditions, I believe the Arbitration Committee should have some choice in the matter of deciding whether or not it is necessary to change existing cars to meet these requirements. As far as new cars are concerned, it is an indication how they should be designed, if that should be adopted as Recommended Practice.

MR. MCMULLEN: I do not know of anything, outside of the draft gear and endframing, that requires more attention than box car doors, and I think we might, perhaps, improve a little upon our Recommended Practice. We are applying two reinforcing angles approximately 12 in. from top and bottom of the door. To the bottom angle we attach the hasp. This makes a continuous strap across the door, which makes a very substantial job. I would also direct attention to the wedge generally used on the bottom of doors. These wedges are so narrow that there is not enough stock left in the wood to hold them, consequently the wedge is lost and the bottom of the door is chewed up by the door guides. I would like to have the committee consider these points, and I will furnish sketch showing to just what I refer.

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THE PRESIDENT: You have heard the motion made by Mr. Kiesel. All in favor, say "aye"; contrary, "no." The motion is carried.

MR. KIESEL: That leaves Subjects No. 5 and No. 6. I move that No. 5 and No. 6 be submitted to letter ballot for adoption as Recommended Practice, No. 6 to be modified in accordance with Mr. Vaughan's suggestions in his minority report relative to that subject.

THE PRESIDENT: Is there any discussion? All in favor of the motion say "aye"; contrary-minded, "no." The motion is carried.

MR. KIESEL: That finishes the subject, except the note on the last page, regarding which Mr. Brazier spoke, as to whether or not a standard box car should be designed.

THE PRESIDENT: Do you wish to take any action on that part of the report? Mr. Kiesel, do you recommend any action on this part of the report?

MR. KIESEL: I do not think it is in the province of the committee to load themselves with a big job like that, unless the Association desires it. It is a big job, and if the Association would not require it, it is hardly worth while spending the time on it.

MR. GAINES: In regard to the question of designing a standard box car at the present time, I think we all realize it would be a desirable thing to do, but it seems utterly impossible in the present status of the art. We are going through an evolution in box-car design to-day. We have two or three different types of inside sheathing, and metal-frame cars, and we do not know which will be the best. We have several kinds of underframing, and we are trying out various types of doors, and other things, and we are not in a position to design a standard car at the present time. Under these circumstances it is useless to load the committee up with a thing of this kind until we know more about it, until we can boil the matter down and find out what would be a standard type of car which would be acceptable. If, however, it is desired to make standard limiting dimensions such as inside height, width and length, this would be all right. As a matter of fact, the

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standard length still is supposed to be 36 ft. Most of the southern roads, however, are standardizing on a 40-ft. length inside.

MR. CHAMBERS: I think the time is perfectly ripe to push hard on the standardization of sizes. The reason we have so many inside dimensions of box cars is because many traffic men, in various parts of the country, if they have one load to ship, for which they have not a suitable car, they design a new car, and then think it is necessary to build a series of cars of that type. There should be greater economy exercised in the matter of the designing of new types of cars to fill special requirements.

MR. CRAWFORD: The Proceedings of the American Railway Association of the last meeting, held in May, have probably not reached all of you, but the Committee on Maintenance has been making an investigation for several years now as to the desirability of making a change in the interior dimensions of the box cars. All the clearance dimensions of all the roads in the country were obtained, and various recommendations were received as to what would be considered a standard box car. The Secretary of this Association tells me he has not yet been advised by the Secretary of the American Railway Association as to that matter, but having served as a member of the Committee on Maintenance, I understand that the M. C. B. Association will be requested to prepare a design of a standard box car when the final vote of the members of the American Railway Association decide what are the proper interior dimensions.

I think when the advice is received from the American Railway Association as to what the action was on this matter, that it would be proper for our Committee on Car Construction to be instructed to take up the work of designing a box car according to the inside dimensions decided on by the American Railway Association.

THE PRESIDENT: Is there any further discussion on this last subject, No. 7?

MR. YOUNG: It seems to me that the question is one of procedure rather than of design at the present time. We are attempting now to adopt an M. C. B. truck of, say, 100,000 lb. capacity, and we have in this report some of the details of the box car, but I believe that placing the work of the designing of the entire

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box car in the hands of one committee is a pretty big subject for one committee to deal with. It seems to me more progress could be made if some of the details were assigned to special committees to give them consideration, as, for instance, a Committee on Underframing; a Committee on Roofs, and a Committee on General Construction of the Car Body and Draft Gear. In that way you could work up the details, and having the general dimensions which would be prescribed by the American Railway Association, you could then bring the car together with the details worked out and in that way perhaps finally arrive at a standard box car. We have certain details now, but it is necessary to get further details before you can finally arrive at the complete design, and by specializing the work, I believe that progress can be made.

MR. KIESEL: As a member of the Committee on Car Construction, it would seem to me that the proposition Mr. Young has just made would have just the opposite effect. If three or four committees work independently and try to design the underframing, the superstructure, the roof and draft gear, etc., they would never get together and make the various parts fit into each other. The whole thing should be in the hands of one committee, so that the whole construction could be considered as one piece.

MR. GAINES: I move that the paragraph now under consideration be referred to the incoming Executive Committee to dispose of it.

THE PRESIDENT: The motion has been made and seconded to refer this matter to the Executive Committee. All in favor say "aye"; contrary-minded, "no." The motion is carried.

We will now have the report of the Committee on Retirement of 40,000 and 50,000 Lb. Capacity Cars, D. F. Crawford, Penna. Lines, Chairman.

Mr. Crawford presented the report, as follows:

REPORT OF COMMITTEE ON RETIREMENT OF 40,000 AND 50,000 POUND CAPACITY CARS.

To the Members:

At the convention in June, 1913, the question of the retirement of cars of 40,000 and 50,000 lb. capacity from interchange service was considered. A motion prevailed that a committee be appointed to consider the question in all of its phases.

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In the discussion of this subject, both in the convention and by the committee, it seemed desirable to give consideration to some of the principal features of the construction of the cars, as well as the marked capacity.

Your committee addressed to the members of the Association the following inquiries:

First: Have you any restrictions in force regarding the use of cars of 40,000 and 50,000 lb. capacity?

Second: Do you accept in interchange cars of 40,000 and 50,000 lb. capacity; if so, is the lading transferred?

Third: Do you regard it practicable to prohibit the use of cars of 40,000 lb. capacity in interchange?

Fourth: Do you regard it practicable to prohibit the use of cars of 50,000 lb. capacity in interchange?

and at the same time requested the members to advise the committee as to the number of cars of the various capacities and several constructions operating on their lines. Summary of the replies received is appended hereto.

Your committee would recommend that the following proposed rule be submitted to special letter ballot, so that it may, if approved, be embodied in the Rules of Interchange effective October 1, 1914:

"After October 1, 1916, all cars of less than 60,000 lb. capacity, having wooden or metal draft arms which do not extend beyond the body bolster, will not be accepted in interchange."

Respectfully submitted,

D. F. Crawford, Chairman,
C. E. Fuller,
J. J. Hennessey,
F. H. Clark,
C. F. Giles,
F. W. Brazier,
R. E. Smith,
Committee.

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RETIREMENT OF 40,000 AND 50,000 POUND CAPACITY CARS.

M. C. B. CIRCULAR No. 20.

Name of Railroad and Individual Car Lines.	Question No. 1. Have you any restriction in force regarding the use of cars of 40,000 and 50,000 capacity?	Question No. 2 Do you accept in interchange cars of 40,000 and 50,000 capacity; if so, is the lading transferred?	Question No. 3. Do you regard it practicable to prohibit the use of cars of 40,000 capacity in interchange?	Question No. 4. Do you regard it practicable to prohibit the use of cars of 50,000 capacity in interchange?
L. & N. R. R. Co.	No.	Yes.	Consider construction of car.	Same as No. 3.
N. Y. C. L.	No.	Yes; lading not transferred, unless condition of car warrents it.	Yes.	Yes; unless cars are equipped with steel underframe, or its equivalent and all metal truck.
B. & S. R. R. Corp.	No reply.	No reply.	No reply.	No reply.
T. M. S. C. Co.	Do not regard it practi	cable to retire 40,000 an	d 50,000 capacity cars.	
N. Y. P. & M. R. R. Co.	No.	Yes.	Yes; with sufficient time limit.	Yes; with sufficient time limit.
G. N. R. Y. Co.	No.	Yes.	No.	No.
St. L. & S. F. R. R.	No reply.	No reply.	No reply.	No reply.
I. C. R. R. Co.	Yes.	No; lading transferred and charged to us.	Yes.	Yes.
C. R. & N. W. Ry.	No reply.	No reply.	No reply.	No reply.
C. G. Rys.	No reply.	No reply.	No reply.	No reply.
G. H. & S. A. Ry. Co.	Yes.	No.	Yes.	Yes.
F. N. De M.	Yes.	Yes; depending upon condition of car.	Yes.	Yes.
T. St. J. & G. I. Ry. Co.	No reply.	No reply.	No reply.	No reply.
M. K. & T. L.	No.	Yes.	Yes.	Yes.
T. P. & W. Ry. Co.	Yes.	Yes; depending upon condition of car.	Yes.	Yes; for 40,000 lbs.

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RETIREMENT OF 40,000 AND 50,000 POUND CAPACITY CARS.

M. C. B. CIRCULAR No. 20.

Name of Railroad and Individual Car Lines.	Question No. 1. Have you any restriction in force regarding the use of cars of 40,000 and 50,000 capacity?	Question No. 2. Do you accept in interchange cars of 40,000 and 50,000 capacity; if so, is the lading transferred?	Question No. 3. Do you regard it practicable to prohibit the use of cars of 40,000 capacity in interchange?	Question No. 4. Do you regard it practicable to prohibit the use of cars of 50,000 capacity in interchange?
T. N. R. R.	No	Yes	Yes	No.
F. E. C. Ry.	No reply	No reply	No reply	No reply.
O. S. L. R. R. Co.	No	Yes	Yes	Yes.
N. Y. O. & W. Ry. Co.	No	Yes	Yes	Yes.
S. P. L. A. & S. L. R. R. Co.	Yes	No	Yes	Yes.
C. & E. I. R. R.	No	Yes	Yes	Yes.
C. & P. S. R. R.	No	Yes	No	No.
S. A. L. Ry.	No reply	No reply	No reply	No reply.
B. Ry. Co. of Chicago	No	Yes	Yes	In reasonable time.
S. R. T. Co.	No reply	No reply	No reply	No reply.
T. St. L. & W. R. R.	No	Yes	No	No.
B. & G. R. R.	No	No	Yes	Yes.
A. E. R. R. Co.	No	Yes	Yes	Yes.
S. W. S. C. L.	No reply	No reply	No reply	No reply.
G. T. Ry. Sys.	No	Yes	Yes	Yes.
C. B. & Q. R. R. Co.	No	Yes	No	No.
N. & W. Ry. Co.	No	Yes	No	In reasonable time.
A. R. T. Co.	No	Should be accepted	No	No.
B. & O. R. R. Co.	Yes; on 40M only	Yes	Yes; depending on construction	Yes; depending on construction.
B. & L. E. R. R.	No	Yes	Yes	Yes.
B. & O. C. T. R. R.	No	Yes	Yes	Yes.
P. L. W. of Pittsburgh	No	Yes	Yes; depending on construction	Yes; depending on construction.

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I. R. R.	Yes	Yes	Yes	Yes.
D. & R. G. R. R.	No reply	No reply	No reply	No reply.
D. T. & I. Ry.	No	Yes	No reply	No reply.
D. & I. R. R. R.	No	Yes	Yes	No.
A. C. L.	No	No reply	No	No.
P. & R. Ry.	No	Yes	Yes	No.
B. & M. R. R.	No reply	No reply	No reply	No reply.
S. P. Co.	No	Yes	Yes	Yes.
G. B. & W. R. R.	No reply	No reply	No reply	No reply.
W. P. Ry. Co.	No reply	No reply	No reply	No reply.
K. C. S. Ry.	No	Yes	Yes	Yes.
D. S. S. & A. Ry. Co.	No	Yes	Not at present	Not at present.
B. C. E. Ry. Co.	No	Yes	No	Yes.
C. P. Ry. Co.	No	Yes	Yes; reasonable time	Yes; reasonable time.
M. St. P. & S. S. M. Ry.	No reply	No reply	No reply	No reply.
D. & H. Co.	No	Yes	No	No.
L. I. R. R.	No	Yes	Yes	Not at present.
T. & G. R. R.	No	Yes	Yes	Yes.
S. & I. E. R. R.	No	Yes	Yes	Yes.
Erie R. R.	No	Yes	Yes	Yes.
R. I. L.	No	Yes	Yes	No.
W. R. R.	No	Yes	Yes	Yes.
G. F. & A. R. R.	No	Yes; lading transferred	Yes	Yes.
B. & S. R. R.	Yes	Yes	Yes	Yes.
P. S. & N. R. R.	No	Yes	Not at present	Not at present.
T. L. & H. R. Ry.	No	Yes	Not answered	Not answered.
A. A. R. R.	No	Yes	Yes	Yes.
V. R. R.	No	Yes	Yes; depending on construction	Yes; depending on construction.
O. W. R. R. & N. Co.	No	Yes	Yes	Yes.
A. T. & S. F. Ry. Sys.	No	Yes	Yes	Yes.
C. S. Ry. Co.	No	Yes	No	No.
L. & N. W. R. R.	No reply	No reply	No reply	No reply.
F. & G. R. R.	No reply	No reply	No reply	No reply.
A. C. L. R. R.	No	Yes	Yes	Yes.
P. E. Ry. Co.	Yes	Yes	No reply	No reply.

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RETIREMENT OF 40,000 AND 50,000 POUND CAPACITY CARS.

M. C. B. CIRCULAR No. 20.

Name of Railroad and Individual Car Lines.	Question No. 1. Have you any restriction in force regarding the use of cars of 40,000 and 50,000 capacity?	Question No. 2. Do you accept in interchange cars of 40,000 and 50,000 capacity; if so, is the lading transferred?	Question No. 3. Do you regard it practicable to prohibit the use of cars of 40,000 capacity in interchange?	Question No. 4. Do you regard it practicable to prohibit the use of cars of 50,000 capacity in interchange?
T. H. & B. Ry. Co	No	Yes; lading transferred	Yes	Yes.
C. & N. W. Ry	No	Yes	No	No.
S. L. & O. F. Ry. Co	No	Yes	No	No.
N. P. Ry. Co	No	Yes	Yes	No.
B. & A. R. R	No	Yes	No reply	No reply.
B. & A. Ry	No reply	No reply	No reply	No reply.
N. O. M. & C. R. R	No	Yes	Yes	Yes.
F. & C. C. R. R	Yes	Yes	Yes	Yes.
L. T. R. R	Yes	No	Yes	Yes.
A. & W. P. R. R	No	Yes	Yes	No.
L. H. & St. L. Ry	No	Yes	No	No.
N. N. Ry	No	Yes	Yes	Yes.
C. T. H. & S. Ry	No	Yes	No	No.
C. C. & O. Ry	No	Yes	Yes	No.
D. L. & W. R. R	No	Yes	Yes	Yes.
W. C. F. & N. Ry	No reply	No reply	No reply	No reply.
M. & N. A. R. R	No	Yes	No reply	No reply.
C. & A. R. R	No	Yes	Yes	Yes.
C. M. & St. P. Ry	No	Yes	No	No.
U. P. R. R	No	Yes	Yes	Yes.
L. S. & I. Ry	Yes	Yes	Yes	Yes.
A. & N. M. Ry	No	Yes	Yes	No.
U. R. R	No	Yes	Yes	Yes.
B. C. R. R	No	Yes	No	No.

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St. L. T. & E. R. R.	No	Yes	No reply	No reply.
W. C. Co.	No reply	No reply	No reply	No reply.
R. F. & P. R. R.	No reply	No reply	No reply	No reply.
W. S. Ry.	No reply	No reply	No reply	No reply.
E. J. & E. Ry.	No	Yes	Yes	Yes.
B. T. R. R.	No	Yes	No reply	No reply.
S. G. Ry.	No reply	No reply	No reply	No reply.
S. P. & S. Ry.	No	Yes	Yes	Yes.
C. P. & St. L. Ry.	No	Yes	Yes	No.
L. V. & T. R. R.	No	Yes	No	No.
P. F. E. Co.	No reply	No reply	No reply	No reply.
M. C. R. R.	Yes, 40M; no, 50M	No, 40M; yes, 50M	Yes	No.
M. R. R.	No reply	No reply	No reply	No reply.
M. C. R. R.	No	Yes	No	No.
M. D. & S. R. R.	No	Yes	Yes	No.
T. N. R. R.	No reply	No reply	No reply	No reply.
C. & C. Ry.	No	Yes	Yes	Yes.
W. P. T. Ry.	Yes	Yes	Yes	Yes.
C. I. & L. Ry.	No	Yes	No reply	No reply.
C. M. & G. R. R.	No	Yes	Yes	No.
A. C. & Y. Ry.	No reply	No reply	No reply	No reply.
B. C. & G. R. R.	No	Yes	No reply	No reply.
D. T. R. R.	No	Yes	No	No.
N. & P. B. L. R. R.	No reply	No reply	No reply	No reply.
C. N. Ry.	No	Yes	Yes	Yes.
K. C. R. R.	No	Yes	No	No.
L. A. & S. R. R.	No reply	No reply	No reply	No reply.
D. M. & N. Ry.	No	Yes	Yes	Yes.
N. Y. N. H. & H. R. R.	No	Yes	Yes	Yes.
C. G. W. Ry.	No reply	No reply	No reply	No reply.
G. R. & I. Ry.	Yes, 40M; no, 50M	Yes; lading transferred	Yes	Yes.
K. C. M. & O. Ry.	No	Yes	No reply	No reply.
G. & S. I. R. R.	No	Yes	Yes	Yes.
M. R. T. & C. Co.	Yes	No reply	Yes	Yes.

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SUMMARY OF ALL QUESTIONS.

QUESTION No. 1.

Have you any restrictions in force regarding the use of cars of 40,000 and 50,000 pounds capacity?

84 have answered Question No. 1	No.
13 have answered Question No. 1	Yes.
2 have answered Question No. 1	Yes for 40M and no for 50M.
1 has answered Question No. 1	Yes for 40M only.
30 have answered Question No. 1	No replies.

QUESTION No. 2.

Do you accept in interchange cars of 40,000 and 50,000 pounds capacity; if so, is the lading transferred?

4 have answered Question No. 2	No.
85 have answered Question No. 2	Yes.
1 has answered Question No. 2	No for 40M and yes for 50M.
1 has answered Question No. 2	Should be accepted.
3 have answered Question No. 2	Yes; lading transferred.
3 have answered Question No. 2	Yes; depending upon condition of car.
1 has answered Question No. 2	No; lading transferred and charged to us.
32	No replies.

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QUESTION No. 3.

Do you regard it practicable to prohibit the use of cars of 40,000 pounds capacity in interchange?

20 have answered Question No. 3	No.
62 have answered Question No. 3	Yes.
2 have answered Question No. 3	Yes; with sufficient time limit.
2 have answered Question No. 3	Not at present.
3 have answered Question No. 3	Yes; depending upon construction.
1 has answered Question No. 3	Consider construction of car.
40	No replies.

QUESTION No. 4.

Do you regard it practicable to prohibit the use of cars of 50,000 pounds capacity in interchange?

30 have answered Question No. 4	No.
48 have answered Question No. 4	Yes.
2 have answered Question No. 4	Yes; in reasonable time.
3 have answered Question No. 4	Not at present.
3 have answered Question No. 4	Yes; depending upon construction.
2 have answered Question No. 4	In reasonable time.
1 has answered Question No. 4	Yes; for 40M.
1 has answered Question No. 4	Consider construction of car.
1 has answered Question No. 4	Yes; unless cars are equipped with steel underframe or its equivalent, and all metal truck.
39	No replies.

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NUMBER OF CARS IN REVENUE SERVICE

Of each of the constructions named below, as of January 1, 1914.

40,000 Pounds Capacity, or Less.

	Box.	Refrigerator.	Stock.	Gondola.	Hopper.	Flat.	Miscellaneous.	Total.
All steel	.....	.....	.....	.....	.....	.....	8	8
Steel underframe	.....	.....	.....	.....	.....	.....	.....	.....
Steel center sills	.....	.....	.....	.....	.....	.....	.....	.....
Metal draft arms	51	144	.....	20	.....	.....	.....	215
Wooden draft timbers extending through body bolsters	14 819	451	5 940	1 081	462	3 639	2 730	29 122
Wooden draft timbers extending to body bolsters	8 899	1 378	1 219	1 457	806	6 415	348	20 522
Grand total	.....	.....	.....	.....	.....	.....	.....	49 867
Metal body bolster	15 463	1 539	4 455	1 061	280	4 634	2 295	29 727
American continuous draft gear	3 703	283	1 162	65	282	759	105	6 359

50,000 Pounds and Less, but over 40,000 Pounds.

	Box.	Refrigerator.	Stock.	Gondola.	Hopper.	Flat.	Miscellaneous.	Total.
All steel	.....	.....	.....	.....	.....	.....	.....	.....
Steel underframe	.....	.....	50	.....	.....	.....	.....	50
Steel center sills	62	17	.....	.....	.....	10	.....	89
Metal draft arms	2 354	502	22	4 425	3 795	1	98	11 197
Wooden draft timbers extending through body bolsters	15 861	624	10 156	1 278	69	981	2 444	31 413
Wooden draft timbers extending to body bolsters	3 304	2 186	1 373	2 103	1 416	2 464	29	12 875
Grand total	.....	.....	.....	.....	.....	.....	.....	55 624
Metal body bolster	18 733	2 370	7 858	6 123	69	841	1 718	37 712
American continuous draft gear	1 670	62	1	938	.....	125	.....	2 796

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OVER 50,000 POUNDS AND LESS THAN 60,000 POUNDS.

	Box.	Refrig-erator.	Stock.	Gondola.	Hopper.	Flat.	Miscel-laneous.	Total.
All steel	.....	.....	.....	.....	.....	.....	161	161
Steel underframe	492	.....	.....	.....	.....	.....	.....	492
Steel center sills	887	1 230	.....	.....	.....	.....	100	2 217
Metal draft arms	1 837	7 341	.....	11	.....	3	.....	9 192
Wooden draft timbers extending through body bolsters	1 551	.....	192	.....	.....	.....	3	1 746
Wooden draft timbers extending to body bolsters	4 336	153	303	27	.....	657	39	5 515
Grand total	.....	.....	.....	.....	.....	.....	.....	19 323
Metal body bolster	8 498	7 434	492	36	.....	589	139	17 188
American continuous draft gear	23	.....	.....	.....	.....	.....	.....	23

60,000 POUNDS CAPACITY.

	Box.	Refrig-erator.	Stock.	Gondola.	Hopper.	Flat.	Miscel-laneous.	Total.
All steel	.....	.....	.....	33	49	100	263	445
Steel underframe	67 302	24 278	4 052	495	.....	2 328	219	98 674
Steel center sills	15 328	9 834	2 162	526	5 923	82	462	34 317
Metal draft arms	70 188	17 564	6 784	4 050	6 207	4 470	1 572	110 835
Wooden draft timbers extending through bolsters	99 951	10 072	21 896	12 768	3 909	11 751	6 267	166 614
Wooden draft timbers extending to body bolsters	153 461	13 785	9 823	21 675	6 258	20 248	2 631	227 881
Grand total	.....	.....	.....	.....	.....	.....	.....	638 766
Metal body bolster	277 691	41 689	33 727	24 663	14 782	27 377	8 829	428 758
American continuous draft gear	19 705	175	141	6 854	1 579	1 035	128	29 617

NOTE.—Summary of all cars according to capacity compiled from 138 replies to M. C. B. Circular No. 20, Retirement of 40,000 and 50,000 pound capacity cars.

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At the conclusion of the reading of the report, Mr. Crawford said: "Your committee found it very difficult to draw any conclusions or make a more definite recommendation than that just given. In the existing M. C. B. rules we are permitted to reject such cars and transfer the lading, and some of the lines are doing that. The replies received did not represent a sufficient number of the membership to warrant the committee making more definite recommendations, or a recommendation which would become effective at an earlier date. It was also felt that the private car lines who have cars as indicated by the number of refrigerator cars reporting, should be given an opportunity to go over their equipment, as that is the equipment of lighter capacities which will probably be prolonged in the service."

MR. GAINES: I move that the report be accepted, and that the matter be referred to letter ballot, as suggested by the committee.

MR. MACBAIN: It seems to me, gentlemen, that while the committee has done all it could with the matter in the time at their disposal, now is the time that something very definite should be done with regard to these low-capacity cars. In the first place, I want to suggest, if nothing better can be done, that the date be changed from October 1, 1916, to October 1, 1915, and, in the second place, as a matter of equity to the various railroads that have cars in the interchange service, I just want to say, and to go on record as saying, that the railroads which are maintaining low-capacity cars, built from fifteen to twenty years ago, at a price from $450 to $600, are not putting their share into the pot. A railroad that has nothing below an 80,000-lb. capacity car in service is loaning that car for the regular per diem, and that same railroad is paying the regular per diem to the fellow that owns the little car, and, consequently, has the smaller amount of money invested. If this Association is good for any purpose, it ought to be good for bringing about equity in that particular thing, and the longer we stave off the matter of eliminating the low-capacity car — let it be equipped as you like — the longer we defer the work that we ought to do and hasten the day that some other person will do it for us. I just wish to go on record as saying that this convention ought to do something in this mat-

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ter. The present proposed rule is not going to help the situation. The summary of all the cars that would be affected by 1916 by the proposed rule won't amount to a drop in the bucket, and something more definite and more drastic ought to be done by the railroads of this country, in order that all the railroads may participate equally in the earnings of their cars, which is not the case at the present time.

The next thing I wish to say is this: There are thousands of low-capacity cars, below 60,000 lb., running around through the country that are causing four to one times the trouble on the repair tracks, and every place else, as compared with the cars of 80,000 lb. capacity, and those cars are being maintained and improved by the railroads that are spending their money at the present time. In face of all these things, gentlemen, I just want to say that this convention ought to do something. We have not done anything yet, and the present proposed rule is not going to help the situation very much.

MR. R. W. BELL (Illinois Central R. R.): The damage to cars of light capacity is something enormous. We find, just as Mr. MacBain has stated, that our damage is largely due to light-capacity cars, and I think the light-capacity cars should be removed from service as quickly as possible. We are in favor of this resolution.

MR. GOODNOW: I would like to ask the committee if, in considering this, and making their definite recommendation, if they gave any consideration to the different classifications of cars, as, for instance, the stock cars, for the reason that the stock car is not handled in general interchange. The western roads have a great many 50,000-lb. capacity stock cars, which are handled, probably as between one or two roads, interchanging with roads at the yards. If a special car of that kind could be eliminated and remove the incentive from any one road, which might take objections to a car of that character and arbitrarily refuse such cars, I believe, at least with the road we represent, that we would not have any objection to the motion as made, except we do not quite understand why a 50,000-lb. capacity car, with practically the same number of sills and everything, is prohibited in interchange, when 60,000-lb. capacity cars, with short draft timbers,

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that are no more capable of being hauled than the 50,000-lb. capacity cars, is not; but I would like particularly to hear some expression on the special cars, such as the stock cars.

MR. HENNESSEY: Mr. President, the question of per diem charges does not belong to this Association. The capacity of the car does. If the Association which controls the per diem charges sees fit to have several classifications for the sizes and capacities of cars, I do not think the Master Car Builders' Association has one word to say about it, but I want some of these gentlemen who are advocating the retirement of low-capacity cars to answer this question: Why compel me to reject a car of good, strong construction simply because it is marked "40,000 lb. capacity" and compel me to accept a weak construction of car having wooden body bolsters and short draft timbers, secured with four or five bolts, just because it is marked "80,000 lb. capacity" or "60,000 lb. capacity"? If you look over the committee report, it is really surprising to note the number of cars, 60,000 and 80,000 lb. capacity, that have short draft timbers. Gentlemen, the most dangerous thing we have to-day is weak construction. It is not the capacity of the car. Take a 40,000 or 50,000 lb. car that has draft timbers extending 2 or 3 ft. beyond the body bolsters; do you mean to tell me that is as dangerous a car as an 80,000 lb. car with draft timbers extending only to the body bolsters and secured with only four or five bolts? I can not see it. If you bar one, I would be willing to say bar all 40,000, 50,000, 60,000 and 80,000 lb. capacity cars if they are equipped with short draft timbers.

MR. MACBAIN: Mr. President and Gentlemen,— I like Mr. Hennessey's remedy all right enough, but I am a good deal like the man who cut his dog's tail off in two pieces — so the dog would not feel it too much. [Laughter.] Now I am in favor of taking out the sixties, too, as far as that is concerned. I think that will come, but we ought to make progress by eliminating first the forties and fifties, and then, later on, consider the sixties, and as to the weak construction that Mr. Hennessey speaks about, no doubt that is a fact. There are thousands and thousands of cars of 80,000 lb. capacity in the country that are weaker in the draft gear than are many in the 40,000 and 50,000 class, but

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that does not mean that the 80,000-lb. car can not be made all right. Now, most of the railroads that are trying to bring their equipment up are trying to correct that condition. They are improving their draft gears and draft timbers on the 80,000-lb. cars, and I am looking forward to the time, in three or four years, when they will all be good, and in fact be a better car, when they are done, than the cars were when they were first built. That is the situation. Now, then, as far as the elimination of the sixties is concerned, I would be willing to include that, and from a lines' standard — the standard of the New York Central Lines — we are willing to include the sixties in the proposed resolution.

MR. H. H. HARVEY (Chicago, Burlington & Quincy R. R.): Mr. Chairman, I think Mr. Goodnow has brought out a very good point in regard to special classes of cars and something that should be considered in connection in placing restrictions on the interchange of low-capacity cars. There is very little use in building 80,000 or 100,000 lb. capacity stock, furniture or automobile cars, as the commodities for which such cars are built will not permit loading of marked capacity. I think the construction of car and not its capacity should be the basis on which to work.

MR. CRAWFORD: I want to say, Mr. Chairman and gentlemen, that all of the members of committee are in entire sympathy with the elimination of the lightly constructed car from traffic at as early a date as practicable. If we are correctly informed, there are some 2,700,000 cars in this country. The data that I have had sent to me as chairman of the committee indicate that there are only 120,000 cars in existence that are causing all of this trouble, if we limit ourselves to the 40,000 and 50,000 lb. capacity cars, which was the subject referred to the committee at your last convention. Therefore, with every railroad in this country having in its own hands the remedy to keep these 120,000 cars out of interchange, I do not think it is necessary for the committee to recommend more arbitrary action than they have recommended. There are other things which we are giving until 1916 to be fixed, such as the American continuous draft gear. I, personally, would like to see the 40,000 and 50,000 lb. cars removed from interchange. My recollection is that the entire Pennsylvania system has 1858 of service cars of these capacities in its

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equipment out of an equipment approaching 270,000, and I do not think it would worry us particularly.

I only defend the date of 1916, because that was the best date the committee could work to, in conjunction with other things in our rules, things that are just as weak and making just as much trouble as these 120,000 cars of the 40,000 and 50,000 lb. capacity. This includes 40,000, 50,000, and cars over 50,000, but less than 60,000 lb. capacity. There are just 120,000 cars reported to us out of 2,750,000 cars. These 120,000 cars are causing all the railroads' trouble, and they can all be kept from causing the trouble on each road by each of you doing what the rules provide. Reject them and transfer the load. Your whole proposition is to save the cost of transfer, if you do not like the car. To answer Mr. Goodnow's question about the stock cars, I find that there is a total of 2900 stock cars affected by this proposition. Now, I stated that the committee was handicapped in not having reports from all the roads. We not only sent out a circular to the roads, but we asked them again to reply, and we checked the replies against the Official Railway Equipment Guide. We have not enough information from the railroads of this country. The gentlemen did not reply to our circulars so as to enable us to be able to give you any better information, and with the information before us, we did not think it was right to put a date earlier than 1916 in the recommendation.

A. C. MATHER (President, Mather Stock Car Co.): Mr. Chairman, I am deeply interested in this subject, and I want each one of you, when you vote, to think and feel as if you owned one or more cars yourself personally. We have a large number of stock cars which were built for the convenience of the railroads. They were built of 40,000 and 50,000 lb. capacity, at the suggestion of the railroads, as the amount of stock carried never exceeds 24,000 lb.

We have data to prove that in transporting cattle from Chicago to New York that it costs $8 a car more, for consumption of coal alone, in the high-capacity steel cars than it does in ours. We maintain the cars at our own expense. They cost the railroad not one dollar, and it seems to me, in deliberating on this subject, you should consider thoroughly your action, and not

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confiscate our property. I can not help but express myself in this way. I am in sympathy with increased and stronger equipment. At the same time I do feel that stock cars should be excepted in this resolution.

MR. E. A. MILLER (N. Y. C. & St. L. R. R.): While I heartily agree with Mr. MacBain that it is desirable to eliminate the old, light twenty to twenty-five ton cars, I believe it would be unfair to the private lines and the many railroads to shorten the time when these cars will be eliminated from interchange below October, 1916, as recommended by the committee. I believe the committee acted very wisely in giving us a liberal time to change from the light to the heavier capacity of cars, and I trust that this convention will not go on record for a shorter date than what the committee has recommended. To my mind, the strength of the car, more than the capacity, should govern in interchange.

THE PRESIDENT: The motion is still open for discussion. I would like to call attention to the fact that this motion does not call for the approval here of this proposed rule, but merely for submitting it to letter ballot; however, I think this is a very good place to have a thorough discussion on the subject.

MR. CRAWFORD: I would say, Mr. President, for your information and the information of the convention, that the committee thought it wise to ask that their recommendation be submitted to a special letter ballot on account of the fact that rather a small percentage of railroads replied to our circular; with more complete information we might bring the matter before you in a more definite form.

MR. O. D. BUZZELL (A. T. & S. F. Ry.): Mr. Chairman, in connection with this last question, I don't think that the committee could have done much better. They have given these people an opportunity to strengthen up their cars so they can be handled, and as far as stock cars are concerned, I think there is nothing that gives a railroad much more trouble than a lot of old stock cars, and it certainly causes us an awful lot of claims, and while I realize the position that it puts a great many of the private lines in, still they have the opportunity to strengthen up those cars so as to make it safe for us to handle them. We are in a peculiar

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position with light equipment on a good many of the western roads. We have heavy grades and heavy power, and as several of the members have stated, we have lots of 60,000 and 80,000 lb. cars that are no better than the 40,000, and I think the sooner we can get continuous metal draft members the full length of the car, the better we will all be pleased, and the less trouble and delay and damage we will have to trains and per diem per crew.

THE PRESIDENT: Any further discussion on this question?

MR. HENNESSEY: Mr. President, I just wish to say one word. I hope that the members in voting on this will consider it is the construction of the car, not the capacity. [Applause.]

MR. GAINES: Mr. President, I would like to answer Mr. Hennessey by saying that it includes both. We are not taking an old car that is twenty years old, and that is of light construction, and putting on metal draft arms, and doing that kind of work to bring it up to greater capacity, but we are taking 60,000 and 80,000 lb. capacity cars, and we are equipping them with steel draft arms, and reinforcing those, and bringing them up to what they should be. We expect to do it where they are not too old to do it. The thing is to eliminate that which is not worth doing work on, and then get busy on that which is worth while and bring them up to the proper standard.

MR. HENNESSEY: In reply to Mr. Gaines, I wish to say this, that the capacity of the cars has differed greatly in the different sections of the country. The East, where they have had a heavy traffic to handle, built 60,000-lb. cars many years before the western roads commenced to build 60,000-lb. capacity cars. Consequently, the East has a great many 60,000-lb. cars that are older than the western roads' 40,000-lb. cars.

THE PRESIDENT: Is there any further discussion on this motion?

MR. BELL: We have on 6000 miles of railway 70,000 cars in service, 70,000 freight cars, and we find, in going over our bad-order tracks, that the majority of cars that are on the bad-order tracks every day are cars that are of light capacity. The small cars of low capacity are causing us all of our expense, practically.

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Now, it is no hardship for the railroads which have those cars of light capacity to take them and strengthen them between now and 1916. They won't be any money out, because we are continually repairing the cars and billing them for the cost of repairs.

MR. GILES: As a member of this committee, I have opposed all along the consideration of the capacity of the car, but we had to have some starting point, and we put in here "60,000 lb. capacity and less"; but the whole meat in this thing here is the short draft timber, and if our private line people desire to strengthen up their cars of 60,000 lb. capacity and less, they have the privilege of doing it; nobody is going to refuse those cars if they have draft timbers in that are better than what we prescribe in this report here.

MR. A. G. MATHER (President, Mather Stock Car Co.): That is right on the proper line. Let the Association pass rules as to what center sills we shall put in our cars in order to strengthen them. It is useless to build 60,000 and 100,000 lb. capacity cars to carry live stock, but we will be glad to strengthen up our draft sills and put in whatever you may require, and that is all that does any work in the cars. Why destroy our cars simply because they are of light capacity, when you never can load over 24,000 lbs.? An automobile designer would not think of putting a truck construction under a passenger car. Confine yourselves to the center construction and let us build the car, aside from the center construction, to conform to the purpose for which it is required.

MR. FULLER: There has been a good deal said here about the center construction of the draft sills and everything else in regard to the 40,000 and 50,000 lb. capacity cars. If a car owner wants to run his 40,000 and 50,000 lb. capacity cars, such cars should be made strong enough so that we can put them in our heavy trains. These cars are old, and I do not know of any other term that this Association or this committee could use to illustrate the old, weak cars except to call them the "forty and fifty," some of which are older than you or I and they are still running. [Laughter.]

MR. MACBAIN: That is questionable. [Laughter.]

MR. HENNESSEY: How old are you, Mr. Fuller? [Laughter.]

MR. FULLER: You object, do you, Mr. Hennessey? So I

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feel that this Association can not too strongly go on record that it is high time to bring the cars up to a capacity to operate in our heavier trains, or else eliminate them. Now, the proposed report of this committee gives the railroads an opportunity to do so; to extend draft sills back; to apply steel underframes, or to do anything they may wish. We do not desire to build 100,000-lb. capacity stock cars to haul live stock if the maximum lading is only going to be 40,000 lb. of stock in a car. We do not ask for that, but we do ask them to bring the underframe or draft gear, or both, up to a point where we can place such cars in tonnage trains operated over mountain grades with safety. A stock car is just as important as any other car and, if anything, more so. When a car of coal is dumped the loss is not great, but when a car of stock is dumped and the stock killed it costs money. I sympathize with the roads that have these classes of cars; we have quite a few of them, but we are willing to discard them altogether, or at least to operate them exclusively on our own rails.

THE PRESIDENT: Does any one else wish to speak on this subject?

If there is no further discussion, the motion is to refer the recommendations of the committee to a special letter ballot. All those in favor say "aye"; opposed, "no." Carried.

Mr. Secretary, what is the next business?

THE SECRETARY: The election of officers.

THE PRESIDENT: The Secretary will announce the result of the election of officers.

THE SECRETARY: Mr. President, for the office of President of the Association there were cast 158 votes. Mr. D. F. Crawford received 158 votes. [Great applause.]

PRESIDENT BARNUM: Mr. Crawford is unanimously elected as President for next year.

THE SECRETARY: For the office of First, Second and Third Vice-Presidents, Mr. D. R. MacBain received 158 votes, Mr. R. W. Burnett received 158 votes. Mr. C. E. Chambers received 157 votes and Mr. R. E. Smith 1 vote.

CHAIRMAN BARNUM: A motion to make unanimous the election of the Third Vice-President will be in order.

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MR. HENNESSEY: I move that it be made unanimous.

Motion seconded.

CHAIRMAN BARNUM: It is moved and seconded that the election of the Third Vice-President be made unanimous. All those in favor say "aye"; opposed, "no." Carried. Mr. C. E. Chambers is unanimously elected Third Vice-President.

THE SECRETARY: For the office of Treasurer, Mr. John S. Lentz received 158 votes, 158 votes being cast. Mr. Lentz was unanimously elected.

CHAIRMAN BARNUM: Mr. John S. Lentz is unanimously elected Treasurer for the ensuing year.

THE SECRETARY: For members of the Executive Committee, a total vote was cast of 161. Mr. R. E. Smith received 160 votes; Mr. J. C. Fritts received 159 votes; Mr. H. T. Bentley received 158 votes; Mr. F. F. Gaines, 2 votes; Mr. T. H. Goodnow, 2 votes; Mr. J. T. Wallis, 1 vote, and Mr. B. P. Flory received 1 vote.

CHAIRMAN BARNUM: A motion to make the election of Messrs. Smith, Fritts and Bentley unanimous will be in order.

MR. BRAZIER: I move that it be made unanimous.

Motion seconded.

CHAIRMAN BARNUM: You have heard the motion that the election of Messrs. Smith, Fritts and Bentley be made unanimous. All those in favor say "aye"; opposed, "no." It is so ordered.

THE SECRETARY: For the Nomination Committee there were cast 156 votes, of which Mr. F. W. Brazier received 115 votes; Mr. F. H. Clark, 99 votes; Mr. J. J. Hennessey, 92 votes; Mr. F. F. Gaines, 78 votes; Mr. A. W. Gibbs, 73 votes; Mr. T. H. Goodnow, 63 votes; Mr. J. T. Wallis, 60 votes; Mr. G. W. Wildin, 56 votes; Mr. W. H. Lewis, 46 votes; Mr. J. Coleman, 46 votes, and scattering, 3 votes. The five receiving the largest vote were Messrs. Brazier, Clark, Hennessey, Gaines and Gibbs.

CHAIRMAN BARNUM: Those five names are elected. Do you wish to make that unanimous?

It was moved and seconded that the vote be made unanimous.

CHAIRMAN BARNUM: You have heard the motion, that the election of the five gentlemen who received the largest number

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of votes be made unanimous. All those in favor say "aye"; opposed, "no." Carried.

THE SECRETARY: For Life Membership, there were 142 votes cast. Mr. C. A. Schroyer received 141 votes. [Applause.]

MR. BRAZIER: Mr. President, in view of the able service, and the dignified way in which Mr. Schroyer has always presided over our meetings, I move that we make the vote unanimous. [Laughter.]

CHAIRMAN BARNUM: I understand from the Secretary that the vote is unanimous.

THE SECRETARY: For Life Membership, Mr. W. S. Morris received 129 votes, and Mr. W. H. Carr received 1 vote. Mr. Carr's name was not proposed, but somebody voted for him anyhow. Anyway, there were 142 votes cast. Mr. C. A. Schroyer received 141, and Mr. W. S. Morris received 129. There were no votes cast against them, so they are elected Life Members.

C. A. SCHROYER: Mr. Secretary, I want to say in that connection I did not vote, but I want to change it and vote for myself. [Laughter.]

THE SECRETARY: Mr. Schroyer then receives a unanimous vote — 142 votes. [Laughter.]

For Associate Member, there were cast 137 votes, of which Mr. C. A. Seley received 137 votes. That was unanimous.

EX-PRESIDENT M. K. BARNUM: Mr. Crawford, it affords me a great deal of pleasure to turn over the gavel to you, sir, as President for the next year.

PRESIDENT-ELECT CRAWFORD: Thank you.

EX-PRESIDENT BARNUM: I am sure the members of the Association will be glad to hear a few words from you, Mr. Crawford. [Applause.]

PRESIDENT-ELECT D. F. CRAWFORD: Gentlemen, it has been my pleasure to have served you for several years as a member of your Executive Committee, and this evidence of your confidence in me, in electing me as your President, is indeed very gratifying. I find it difficult to express my appreciation. I trust that I will be able, with your splendid coöperation, to carry on and further the work of this important Association as well as it has

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been done by my very able predecessors. I think you all realize the important questions that are coming before the Association during the next year, and I hope that we will be able to make reports that will dispose of at least some of them at the next convention. I again wish to express my appreciation. [Applause.]

MR. MACBAIN: Mr. Chairman, I wish to propose to the convention, in view of the valuable work that has been done by the retiring President, who has done perhaps more than any other individual in the way of getting around and traveling long distances to attend the meetings of this Association, so that nothing he could do would be left undone, that we take a standing vote of thanks to him for his untiring efforts in behalf of the Association.

The motion was seconded by a number of members.

PRESIDENT-ELECT CRAWFORD: Gentlemen, you have heard the motion and the second; it hardly seems necessary to call for that vote, but won't you please rise and let us show how we all feel? [Everybody arose.] Be seated, gentlemen.

THE SECRETARY: Mr. President, one of our very active members said this morning that he has been accused of throwing bouquets. I would like to ask the privilege of the floor for this gentlemen. He has some more bouquets to throw, he says. I refer to Mr. Brazier, a past President of this Association.

F. W. BRAZIER: Mr. President, Members of the Association, and Past President M. K. Barnum,— Mr. Barnum, forty-eight years ago a few prominent carmen assembled and formed this Association, almost half a century ago. The work done by these men in standardizing the equipment, in the interchange rules, and other things, has placed us second to no other Association of railroad men in this country. The reputation of this Association is known the world over. The Association has been presided over, in the past, by twenty-five presidents, who have filled their positions with credit and honor, and I want to say to you, Mr. Barnum, having been associated with you on the Arbitration Committee with my fellow colleagues, that I know personally how hard you have worked, and I know of no one who has tried harder and who has brought more dignity and who has placed the Association on a higher plane of efficiency than what you have tried

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to do. I have been a member of the Association now for quite a few years, and have been in active service. I trust, sir, that you will live many years. I feel honored that the Association selected me to make this presentation to you. The Association has felt that some emblem or insignia should be worn by the past Presidents. I only trust, sir, you will have as much pride in wearing this badge as that able, good, old honorable past President, John Hennessey [laughter], and also the Honorable John Lentz, past President, and now our Treasurer, who sit here at the front watching the interests of the Association, and are generally on the right side. I assure you, sir, it is with a great deal of pleasure that I present you with this badge, and I trust that your descendants will look upon it in the future and say: "This badge was worn by M. K. Barnum, a member of our family, whom we love and honor." I present you with this badge. [Great applause.]

EX-PRESIDENT BARNUM: Gentlemen, members of the M. C. B. Association, I want to thank you for your hearty vote of thanks for my work during the past year, and I wish especially to thank you for the beautiful emblem which has just been presented me through Mr. Brazier, one of your honored ex-Presidents.

I feel that it has been an unalloyed pleasure to preside over this convention. The earnest interest that has been shown by the members, the importance and thoroughness of the reports, and the businesslike way in which the discussions have been conducted, have made the job easy; in fact, I think the Master Car Builders' Association is out of sight, ahead of the United States Congress, in the way they handle business! [Laughter.]

When I graduated from college, one of the questions that was asked of every member of the graduating class was what they were going to follow in the way of a business career; some of them were going to teach school, some of them were going to be ministers, and so on, and my reply was that I was going to be a railroad president. [Laughter and applause.] I have not attained that distinction, but I feel that I have exceeded it in being President of the Master Car Builders' Association.

PRESIDENT-ELECT CRAWFORD: Gentlemen, before we adjourn I would like to ask the members of the Executive Committee to

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remain, as there will be a short meeting. There being nothing further to come before the convention, a motion to adjourn is in order.

On motion, the convention adjourned.

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MINUTES OF MEETING OF EXECUTIVE COMMITTEE.

MINUTES OF MEETING OF THE EXECUTIVE COMMITTEE OF THE MASTER CAR BUILDERS' ASSOCIATION, HELD AT THE VANDERBILT HOTEL, NEW YORK CITY, ON TUESDAY, NOVEMBER 4, 1913, AT 1:30 P. M.

Present: Messrs. M. K. Barnum, D. F. Crawford, D. R. MacBain, R. W. Burnett, J. S. Lentz, R. E. Smith, C. E. Chambers, T. M. Ramsdell, C. E. Fuller, C. F. Giles.

The Secretary presented a communication dated August 5, 1913, from the Arbitration Committee calling attention to the serious condition of the matter of side doors on box cars, whereby a great many cars are being handled through interchange with doors either missing entirely or in such condition as to improperly protect the load in the case of loaded cars, and to be a menace to passing trains, suggesting a design of door including a design of top rail and hanger, which latter two items were not a standard of the Association, and a recommendation as to a modification of the rules of interchange to cover the application of such doors to cars. The correspondence submitted included replies to the letter of August 5, 1913, from the members of the Executive Committee. After a general discussion of the subject, on motion it was referred to the Committee on Car Construction to consider in connection with the work of that Committee.

The Secretary stated that in accordance with the instructions of the Executive Committee at its last meeting, after consultation with Mr. Barnum, President of the Master Car Builders' Association, Mr. MacBain, President of the American Railway Master Mechanics' Association, and Mr. Henry La Rue, President Western Railway Club, more commodious quarters had been selected for the Secretary's office in Room 1112 Karpen Building, Chicago, Illinois.

The President, Mr. Barnum, submitted the matter of issuing a handbook containing the standards governing the application of safety devices to cars, for the use of Car Inspectors, and stated that he had seen representatives of the Interstate Commerce Commission and that there was no objection on their part to the issuance of such a pamphlet. On motion, the issuance of such pamphlet was approved and the form of same left to the decision of the President and Secretary after conference with other members of the Executive Committee.

The President, Mr. Barnum, stated that a great many questions had arisen as to the new air-brake hose specifications, especially as to the apparent increased cost. A general discussion then followed, in which it was indicated that while the first prices named by the manufacturers might

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be somewhat high, when they became more familiar with its manufacture the price would, no doubt, be modified.

The question of the application of the new air-brake hose label to hose manufactured under the 1905 specifications was considered, and the Secretary was instructed to advise the hose manufacturers that the use of the new label on hose other than those made under the 1913 specifications was not allowable.

A communication from Mr. George Hodges, Secretary of the Special Committee on Relations of Railway Operation to Legislation, dated September 24, 1913, submitting copies of circulars and bulletins comprising all the publications which have been issued with respect to the specifications for steel and steel underframe postal cars, which have been agreed upon between the railways as represented by the Special Committee and the Government, as represented by the Post Office Department.

On motion, it was decided that if the printing of the report of proceedings had not proceeded too far, that a note calling attention to the Government requirements regarding postal cars be added.

A communication from Mr. George Hodges, Asst. General Agent, American Railway Association, dated September 4, 1913, enclosing copies of correspondence between Mr. F. A. Delano, President, Wabash Railroad, and Mr. F. M. Lucore, Asst. General Manager, Sunset Central Lines, suggesting that the Master Car Builders' Association put a man in the field, reporting direct to the Executive Committee, to inquire into the practices in vogue throughout the country in regard to repairs of foreign cars. On motion, the scheme was declared impracticable and no action taken other than to lay the matter on the table.

The Secretary stated that the supply of bound volumes containing Arbitration Cases Nos. 1 to 603 was exhausted, and asked whether it was thought advisable to reprint the early decisions. On motion the Secretary was instructed to prepare a synopsis of cases Nos. 1 to 603 and reprint cases No. 604 to date, in one volume.

A communication from Mr. D. F. Crawford, G. S. M. P., Penna. Lines, dated October 10, 1913, was read, stating that at a meeting of the Committee on Retirement of 40,000 and 50,000 lb. capacity cars from interchange service, Executive Committee Circular No. 5, dated July 24, 1913, in relation to the stenciling of cars equipped with United States Safety Appliances, was considered, and the Committee unanimously agreed to recommend the issuance of a substitute circular, specifying that the stenciling of cars is not required either by the Safety Appliances Act or by any order of the Interstate Commerce Commission, but was devised by the Master Car Builders' Association for the convenience of the roads forming its membership and the Inspectors of the Commission; also that the condition of the appliances on the car alone, and not the improper stenciling, determines whether or not the car complies with the law and orders of the Commission.

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On motion, it was decided to issue a modified circular, the final form of the circular to be determined at the next meeting of the Executive Committee.

A letter from Mr. S. G. Thomson, S. M. P. & R. E., Philadelphia & Reading Ry. Co., dated October 22, 1913, was read, calling attention to the requirements of Rule 30 of the Rules of Interchange, in regard to marking of cars with their cubical capacity, and on motion was referred to the Committee on Revision of Standards and Recommended Practice, to determine what is meant by the cubical capacity and also to show method of marking cars.

A communication from the Chairman of the Committee on Specifications and Tests of Materials resubmitting correspondence from the Sprague Electric Works in reference to preparing a special specification covering armored hose, was read and the Secretary instructed to advise the representatives of the Sprague Electric Works that the Committee does not feel warranted at this time in having a specification prepared; that there would be no objections to individual roads using such hose on cars offered in interchange.

Mr. H. E. Passmore, a member of the Committee on Revision of Prices of Labor and Material, having left railroad service, was dropped from membership in the Association, and Mr. H. H. Harvey, General Car Foreman, C. B. & Q. R. R., was named in his stead on the committee.

The Secretary presented a letter from Mr. Wm. Garstang, Chairman of the Committee on Car Wheels, stating that he had decided to retire from active railroad service on January 1, 1914, and asked to be relieved from the chairmanship of the committee. On motion, Mr. A. E. Manchester was named in his stead as chairman of the committee, and Mr. C. B. Young, M. E., C. B. & Q. R. R., a member of the committee in his stead.

The Secretary was instructed to express to Mr. Garstang the appreciation of the Executive Committee on the work he had done on the Wheel Committee and in other directions for the Association, and their regrets that he feels it necessary to retire from active railroad service.

The issuance of interpretations of the rules of interchange by the Arbitration Committee, as shown by Circular No. 12, and especially the interpretations given of Rule 120, pertaining to the short-routing of worn-out cars, was considered, and it was decided that the further issuance of such circulars should be withheld pending another meeting of the Executive Committee.

There being no further business the meeting adjourned, with the understanding that another meeting would be called to be held in New York City on December 11, 1913, to which meeting the members of the Arbitration Committee should be invited.

JOS. W. TAYLOR,
Secretary.

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MINUTES OF JOINT MEETING OF EXECUTIVE COMMITTEES OF THE MASTER CAR BUILDERS' ASSOCIATION AND THE AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION, HELD AT THE VANDERBILT HOTEL, NEW YORK CITY, ON TUESDAY, NOVEMBER 4, 1913, AT 10 O'CLOCK A. M.

Present for the Master Car Builders' Association: Messrs. M. K. Barnum, D. F. Crawford, D. R. MacBain, R. W. Burnett, J. S. Lentz, R. E. Smith, C. E. Chambers, T. M. Ramsdell, C. E. Fuller, C. F. Giles.

Present for the American Railway Master Mechanics' Association: Messrs. D. R. MacBain, F. F. Gaines, E. W. Pratt, Wm. Schlafge, Angus Sinclair, C. F. Giles, F. H. Clark, W. J. Tollerton, J. F. DeVoy, J. T. Wallis. Mr. G. W. Wilden was represented by Mr. MacBain as proxy.

The Supply Men's Association was represented by Messrs. B. A. Hegeman, Jr., President, and J. D. Conway, Secretary.

On motion, Mr. Barnum was selected as chairman of the committee.

The Chairman stated that the object of the meeting was to select the place and date for the annual conventions of the two Associations for 1914.

Mr. Hegeman, on behalf of the Committee on Arrangements, stated that invitations had been received from several cities for the Convention and that representatives from Atlantic City, N. J., and Buffalo, N. Y., were present to present the claims of these two cities. It was agreed that each should be allowed to present their respective claims, whereupon Mr. A. T. Bell of the Atlantic City Hotel Men's Association and Mr. Saunders of the Buffalo Chamber of Commerce were invited into the meeting and submitted invitations.

A telegram from Mr. Jos. C. Grieb, Manager, Milwaukee Auditorium Association, extending an invitation to hold the meeting in Milwaukee, Wis., was read. Mr. De Voy stated in a general way the accommodations that city had to offer.

An informal ballot was then taken, which was subsequently made formal, accepting the invitation of Atlantic City, N. J. It was decided that the Convention of the Master Car Builders' Association should be held on June 10, 11 and 12, and the Master Mechanics' Convention on June 15, 16 and 17, 1914. The Marlborough-Blenheim Hotel was agreed upon as headquarters. The arrangement of details for the Convention was left to the Committee on Arrangements, Messrs. Barnum, MacBain and Hegeman.

There being no further business the meeting adjourned.

JOS. W. TAYLOR,
Secretary.

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MINUTES OF THE EXECUTIVE COMMITTEE MEETING HELD IN THE OFFICE OF THE SECRETARY, 1112 KARPEN BLDG., CHICAGO, ILL., ON TUESDAY, FEB. 17, 1914, AT 10 O'CLOCK A. M.

Present: Messrs. Barnum, Crawford, Smith, Brazier, Lentz, La Rue, Ramsdell, Giles and Burnett.

A communication from Mr. Arthur Hale, chairman of the Committee on Private Cars of the American Railway Association, stating that in the investigation of privately owned freight cars by the Interstate Commerce Commission, the question of changes in the M. C. B. Rules and increased charges for the repairs of cars has been raised by a number of representatives of the private car lines; that the Committee on Private Cars representing the railways desires to present during the investigation a full statement covering all the changes recently made in the M. C. B. Rules which could affect the charges made against private car lines, together with the reasons why these changes were made, and their effect, and ask that properly qualified members be ready to testify as to the rules.

On motion, Mr. T. W. Demarest, S. M. P., Pennsylvania Lines, West, Fort Wayne, Ind., and the Secretary were directed to handle this matter.

The question of the publication of a book or pamphlet, to be distributed to the members, containing descriptions and diagrams of the United States Safety Appliances, was considered. At a former meeting of the Executive Committee this matter had been referred to the Secretary, but the President stated that he believed the subject was one for committee investigation, and on motion the matter was referred to the Committee on Safety Appliances to prepare and submit such pamphlet.

The question of the issuance of a circular on the subject of stenciling of cars equipped with U. S. Safety Appliances, which circular was to supersede Circular No. 5, dated July 24, 1913, was presented to the committee in the form of a revised circular by the Secretary, and after some changes the circular was ordered printed and distributed to the members.

On motion it was decided to have an afternoon session on the second day of the Convention in June, to be devoted exclusively to the consideration of a revision of the rules of interchange.

The Arbitration Committee submitted some further interpretations of the rules of interchange, which were discussed, and after some modifications were made the Secretary was instructed to issue the circular to the members.

A communication from the Arbitration Committee, in regard to the short-routing of cars as covered by Rules 120 and 121 of the M. C. B. Rules and the proposed modifications of Per Diem Rule 7, was read as follows:

"On January 27, 1914, the Conference Committee of the American Railway Association met the Arbitration Committee of this Association

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to confer in regard to the short-routing of cars as covered by Rules 120 and 121 of the M. C. B. Rules, and the proposed modification of Per Diem Rule No. 7, which was referred back to the Committee on Conference by the American Railway Association at its meeting on December 3, 1913.

"The consensus of opinion was that in the interest of safety, avoidance of train accidents, etc., the movement of cars in a general worn-out condition should be reduced to the lowest possible minimum, and the remedy lies in the adoption of a rule that will require such cars to be either destroyed or repaired by the holding road. It was agreed that the Arbitration Committee would propose a modification of Rules 120 and 121 and submit same to the Executive Committee, which committee in turn would transmit same to the Committee on the Relations Between Railroads, with recommendations with respect to the following propositions:

"1. When shall per diem cease on car reported to owner under M. C. B. Rule 120?

"2. When authority is given holding road by car owner to repair car, how soon thereafter shall per diem be assessed?

"3. Recommendation with regard to short-routing home of cars damaged in accidents, Rule 121.

"4. Question of sending home cars in worn-out condition, under Rule 120, when the holding road is a direct connection of the road owning the car. Cessation of per diem under these circumstances.

"It was the understanding these recommendations would be considered by the Committee on Relations, and the question as to whether cars should be either destroyed or repaired by holding road would be considered by the Committee on Relations and the Committee on Maintenance of the A. R. A., the policy of the A. R. A. to be indicated to the Master Car Builders' Association and new rules would be formulated accordingly and be presented at the June meeting.

"In accordance with the above, the Arbitration Committee would submit for consideration the following proposed changes in Rules 120 and 121:

"'Rule 120. A car unsafe to load on account of general worn-out condition, due to age, decay or corrosion, shall be jointly inspected by the handling line and a representative of the owner or of a disinterested line, whichever can be most conveniently obtained by handling line. If the inspectors agree that the car is in a generally worn-out condition, due to age, decay or corrosion, joint inspection record shall be sent to owner, showing in detail the condition of parts and all defects found on the car. Upon receipt of this information the owner shall either authorize the handling company to rebuild the car or to destroy it. If the owner elects to have the car destroyed the handling line shall allow credit for all material at M. C. B. scrap prices, less labor cost of destruction.

"'The joint inspection shall apply in cases both of direct connection as well as indirect connection, except when car is at a junction with owner's line, in which latter case owner must accept car as per Rule 2.

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"'Rule 121. When the body or trucks of a foreign car are destroyed in wreck or accident, the owner shall, upon request, furnish statement of depreciated value of body and trucks separately. Upon receipt of this information from the owner, the handling company may elect to rebuild the car or complete its destruction. In the latter case, the handling company to reimburse the owner for the complete car, as provided in Rule 117.'

"Under the provisions of this proposed modification of Rule 121 it will be understood that neither steel underframes as provided for in Rule 115, nor air brakes nor trucks, will be returned to the owner.

"The following changes will be required in Per Diem Rule No. 7, to conform to the above changes in Rules 120 and 121:

"'When a car is repaired by handling line under the provisions of M. C. B. Rule 120 or 121, in either case per diem shall cease from the date owner is advised.'

"Rule 120. If the owner advises destruction of car, per diem shall continue from date of owner's advice to the date owner is advised of destruction of car.

"If owner orders car rebuilt, he shall at the same time forward all necessary blue-prints and specifications. The handling company will be relieved of per diem for three months from date of such order by owner.

"Rule 121. Per diem shall cease from date of request on owner for depreciated value of equipment to date of owner's advice.

"If the handling company elects to destroy the car, per diem shall apply from date of advice from owner to date of advice from the handling company that car is destroyed. If the handling company elects to rebuild the car, the per diem shall not begin until three months after date of owner's advice containing blue-prints and specifications.

"The above is respectfully submitted to the Executive Committee for consideration.

JOS. W. TAYLOR, *Secretary.*"

The matter was very carefully considered by the Executive Committee, and on motion it was decided that the recommendation be not concurred with; that Rules 120 and 121 should remain as at present.

A communication, dated February 5, 1914, from the Arbitration Committee, suggesting the modification of Rule 125 of the loading rules, was read, as follows:

"Rule 124 of the Loading Rules provides that 'Loading must be secured in closed cars so that it will not come in contact with side doors or roll and shift in transit.'

"In the operation of this rule an injustice is frequently done an intermediate or receiving line. If the doors are not bulged no opportunity is presented to inspect such lading, unless the seals are broken. The lading must shift during the transit of car over the receiving line, through no fault of the receiving line, in which case it is held responsible

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at its delivering connection. To place the responsibility where it belongs, that is, on the initial line, the Arbitration Committee proposes that the American Railway Association be requested to approve the following recommendation:

"'The initial line to be held responsible for cost of rearrangement and proper lading of closed cars when not loaded in accordance with M. C. B. Loading Rules.'"

After careful consideration the matter was approved and the Secretary instructed to advise the American Railway Association to that effect.

A communication from Mr. D. F. Crawford suggesting that the Committee on Brake Beams be instructed to again take up the subject of brake beam No. 2, which was defeated by letter ballot in 1913, and make such tests and comparisons as may be necessary to adequately present the subject to the Association at the June Convention, if possible, was considered, and on motion it was decided to again open up this subject and have the Committee on Brake Beams make the necessary investigation.

A communication from Mr. S. W. Stratton, Director of the Bureau on Standards, addressed to Mr. Wm. Garstang, Chairman of the Wheel Committee, asking whether that bureau could count on the coöperation of the Master Car Builders' Association in the various tests of chilled car wheels, which it was proposed to have made by the Bureau of Standards, was considered and the Secretary instructed to write the chairman of the Wheel Committee, Mr. W. C. A. Henry, to call on Mr. Stratton to ascertain the scope of the work of that Bureau and refer him to the Proceedings of the Association, which contain the records of work accomplished by the Association.

A communication from Mr. Chas. A. Wickersham, chairman of the General Managers' Association of the Southeast, suggesting the formation of a Joint Railroad Bureau for the inspection of railway materials, was considered and the Secretary instructed to advise Mr. Wickersham that the committee does not feel that it is in position to take any action in this matter: that it is a matter of policy over which this Association has no jurisdiction.

The Secretary was instructed that in issuing the interpretations of the rules of interchange that they be reproduced in a small pamphlet so that they can be incorporated in the book of Rules of Interchange.

Adjourned.

JOS. W. TAYLOR,
Secretary.

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MINUTES OF MEETING OF EXECUTIVE COMMITTEE OF MASTER CAR BUILDERS' ASSOCIATION, HELD IN THE OFFICE OF THE SECRETARY, 1112 KARPEN BLDG., CHICAGO, ILL., MAY 7, 1914, AT 10 O'CLOCK A. M.

Present: Messrs. M. K. Barnum, D. F. Crawford (represented by Mr. T. W. Demarest), D. R. MacBain, C. E. Chambers, R. E. Smith, C. F. Giles, R. W. Burnett, J. S. Lentz.

At the suggestion of the President the Sub-Committee on Conference of the American Railway Association was admitted to discuss matters pertaining to the rules of interchange and per diem rules, and after full consideration the following resolution was agreed to, to be presented to the American Railway Association by the Sub-Committee on Conference:

Resolved, That the Master Car Builders' Association be requested to so reframe its rules of interchange as to provide that a car unsafe to load on account of general worn-out condition, due to age, decay or corrosion, or due to wrecks or accidents, shall not be offered in interchange except to a direct connection, who must also be the owner of such car.

PROPOSED RULE 7.

When a car has been destroyed and reported under the Master Car Builders' Rules, the per diem shall cease from the date of notice to owner.

FIRST PROPOSED RULE 8.

When a car is detained awaiting the receipt of repair material which, under M. C. B. Rules, must be obtained from the owner, the per diem shall cease from the date the necessary material is ordered from the owner until the date on which it is shipped, as evidenced by carrier's shipping receipt.

When a car unsafe to load on account of general worn-out condition, due to age, decay or corrosion, is reported to owner under M. C. B. Rule 120, per diem shall cease from date of such report.

If owner authorizes the repair of such car, and no repair material is required from owner, per diem shall begin after repairs are completed, but in no case to exceed 60 days from date such authority is given.

If repair material must be obtained from the owner under paragraph 1 of this rule, per diem shall begin after repairs are completed, but in no case to exceed 60 days from date material is shipped, as evidenced by carrier's shipping receipt.

The following letter was received from the Arbitration Committee:

"*To the Executive Committee:* "May 8, 1914.

"The prices for labor and materials on repairs to foreign cars under the M. C. B. Rules up to October 1, 1912, contemplated that the work be done at the actual cost of the labor and material, with no allowance to the repairing line for use or upkeep of facilities furnished, supervision, etc. To partially reimburse the repairing line for the use of its facilities and to

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stimulate the repairs to foreign cars, the Association, as of October 1, 1912, authorized the application of a flat 10 per cent increase to the net total of freight repair bills. The 1913 convention adopted, at the recommendation of the Committee on Revision of Prices for Labor and Materials, an increase in this labor rate per hour of 16⅔ per cent, or from 24 to 28 cents per hour, the 10 per cent increase on the net total of bills, authorized in 1912, being absorbed in this increase.

"At recent hearings before the Interstate Commerce Commission, on the request of private car owners for an increase in their mileage rate, it was developed very conclusively and forcibly that this increase of 16⅔ per cent was insufficient; that in repairing any cars, in order to compensate the repairing line for the use of its facilities, their upkeep, switching, supervision, etc., an overhead charge very considerably greater than the 16⅔ per cent provided must be made.

"While some non-members of the Association and non-subscribers to the rules accept charges, and bill for repairs under the rules, there are others who insist on billing against the railroads on the basis of their full cost, including full allowance for all overhead charges, the resulting charges being considerably in excess of the allowance under the rules, while the railroads, on repairs to cars of such owners, continue to bill in accordance with the rules. This condition is not equitable to the railroads, nor is it a condition which we can continue. Your committee feels that it will be necessary to take such action as will permit charges under the M. C. B. Rules to be made on a basis that will represent cost and not loss. It does not feel that any distinction can consistently be made in charges as between members and subscribers to the rules and non-members and non-subscribers to the rules, but that any increase which may be made must apply to all car owners alike.

"Your committee therefore proposes that, in order to more fully compensate the repairing line, an addition of 65 per cent of the labor cost should be added to the bill to cover overhead expenses. As a 16⅔ per cent increase was authorized last year to partially provide for this, your committee would now recommend adding to the total labor cost enough to make up the 65 per cent overhead charges which is necessary to approximately cover supervision, use of facilities, upkeep of plant, switching, etc.

"For the Arbitration Committee:

"JOS. W. TAYLOR, *Secretary.*"

On motion, the Secretary was instructed to send to each member of the Association, as quickly as possible, a copy of the letter, requesting that each member come to the Convention in June prepared to pass upon the subject for the line which he represents, final action to be taken on the subject after discussion at the Convention.

The committee then approved certain interpretations of the rules of interchange proposed by the Arbitration Committee, after which an adjournment was taken.

JOS. W. TAYLOR,
Secretary.

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MINUTES OF MEETING OF EXECUTIVE COMMITTEE, MASTER CAR BUILDERS' ASSOCIATION, HELD IN THE MARLBOROUGH-BLENHEIM HOTEL, ATLANTIC CITY, N. J., ON TUESDAY EVENING, JUNE 9, 1914, AT 8 O'CLOCK.

Present: Messrs. M. K. Barnum, D. F. Crawford, D. R. MacBain, R. W. Burnett, J. S. Lentz, R. E. Smith, C. F. Giles, C. E. Chambers, C. E. Fuller.

The Secretary presented his annual statement, which was considered and ordered read in Convention.

Circular No. 42, dated May 11, 1914, from the Executive Committee to the members, on the subject of increasing the labor rate in the rules of interchange to include an allowance to repairing line for the repairs of cars for the use of upkeep of facilities furnished, supervision, etc., was considered, and, on motion duly seconded, it was considered the opinion of the members of the committee that the matter should be given further consideration, and that motion to the effect that the subject be referred to a special committee for further investigation and report at the Convention of 1915.

The reports of the Arbitration Committee and Committee on Revision of Prices for Labor and Material were considered and ordered presented to the Convention in the regular manner.

The Executive Committee, in considering the financial condition of the Association and the unusually heavy expense in connection with the additional printing required during the year, deemed it advisable to increase the dues to take care of the increased expenditures, and recommended that the dues for representative members be increased to $7 per vote, the dues of active and associate members to remain as at present, namely, $5 per vote.

A communication from Mr. J. T. Wallis, G. S. M. P., Pennsylvania R. R. Co., Altoona, Pa., calling attention to the necessity of equipping refrigerator cars with door hooks and staples to hold the doors open, and suggesting that the Arbitration Committee be instructed to have a clause inserted in the interchange rules that after October 1, 1914, refrigerator cars not so equipped with door hooks and fasteners to secure the doors in the open position will not be accepted in interchange, was considered, and the Arbitration Committee instructed to submit such a recommendation, but extending the time to October 1, 1916.

The Secretary presented a letter from Mr. W. F. Allen, Gen. Secy., American Railway Association, dated May 26, 1914, outlining action taken by that Association at its meeting in New York City on May 20, 1914, in reference to non-acceptance of cars in interchange of a car unsafe to load on account of general worn-out condition, due to age, decay or corrosion, or due to wreck or accident, and the proposed amendments to Per Diem Rules 7 and 8 in relation thereto.

A memorandum from Mr. Geo. Hodges, Asst. Genl. Agt., American

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Railway Association, dated May 29, 1914, also giving resolutions of the American Railway Association at its meeting in New York, May 19, 1914, in regard to the non-acceptance of cars in a general worn-out condition, due to age, decay or corrosion, or due to wreck or accident, as covered by M. C. B. Rule 120 and Per Diem Rules 7 and 8, also additional resolutions regarding car service Rules 3f and 11, were read, and the Secretary instructed to call the attention of the Association to the recommendation regarding the light-weighing of cars, and also propose that a note be added to M. C. B. Rule 30 to the effect that the marked weight shall be the multiple of 100 lb. nearest the scale weight, except that when the scale weight indicates an even 50 lb. the lower multiple shall be used.

The application of Mr. E. S. Way, Gen. Foreman, M. C. B. Clearing House, Penna. R. R. Co., Altoona, Pa., for active membership was approved.

The application of Mr. L. H. Albus, Supervisor of Air Brakes, N. Y. C. & H. R. R. R., West Albany, N. Y., for active membership, was approved.

A communication from the Doud Stock Car Co., submitting brief and argument of that company in the matter of private cars before the Interstate Commerce Commission, docket 4096, in which reference to Circular No. 42, dated May 11, 1914, from the Executive Committee to the members, covering letter of May 8, 1914, from the Arbitration Committee to the Executive Committee, regarding the matter of overhead charges in repair bills, was read and filed.

On motion the application of Mr. C. A. Schroyer for Life Membership was approved and the Secretary instructed to propose the name of Mr. Schroyer for ballot to the Convention, with the approval of the Executive Committee.

A communication from the chairman of the Committee on Papers of the International Engineering Congress, 1915, San Francisco, Cal., requesting that a paper be prepared for presentation at the Congress of 1915 on the subject of "Rolling Stock Other Than Motive Power," was read, and the Secretary instructed to reply that this was not an Association matter, but rather one that should be taken up with an individual railroad man.

A letter from the Hewitt Rubber Co., Buffalo, N. Y., dated May 15, 1914, asking whether they can make use of the copyrighted label referred to in the M. C. B. air-brake hose specifications on steam hose, was read, and the Secretary instructed to advise that it is entirely optional with the road ordering steam hose, under the M. C. B. Rules as they now exist.

The following list of ten names from which to select a committee on Nominations of five members were selected by the committee: F. W. Brazier, A. W. Gibbs, F. H. Clark, T. H. Goodnow, F. F. Gaines, J. T. Wallis, W. H. Lewis, Jas. Coleman, G. W. Wildin, J. J. Hennessey.

There being no further business the meeting adjourned.

JOS. W. TAYLOR,
Secretary.

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MINUTES OF MEETING OF EXECUTIVE COMMITTEE, MASTER CAR BUILDERS' ASSOCIATION, HELD IN THE GREEK TEMPLE, MILLION DOLLAR PIER, ATLANTIC CITY, N. J., ON JUNE 12, 1914, AT 1:30 P. M.

Present: Messrs. D. F. Crawford, D. R. MacBain, R. W. Burnett, C. E. Chambers, J. S. Lentz and R. E. Smith.

Mr. Jos. W. Taylor was reëlected Secretary, compensation the same as heretofore.

The Secretary was instructed to keep the funds of the Association in the Illinois Trust & Savings Bank.

Mr. Jno. S. Lentz, having asked to be relieved from service on the Arbitration Committee, Mr. James Coleman, M. C. B., Grand Trunk Ry., was named in his stead.

On motion, duly seconded, the Secretary was instructed to prepare a letter to Mr. Lentz, to be signed by the members of the Executive Committee, expressing appreciation of the long and meritorious service rendered by him as a member of the Arbitration Committee and the regret that he deems it necessary to retire from the committee.

On motion, duly seconded, Messrs. J. J. Hennessey, T. W. Demarest, F. W. Brazier and M. K. Barnum were reappointed as members of the Arbitration Committee.

The Secretary stated that all matters referred to the Executive Committee for consideration would be gathered together, and it was suggested that a meeting of the committee be called about July 10 for the purpose of naming the committees for the Convention of 1915.

There being no further business the meeting adjourned.

JOS. W. TAYLOR,
Secretary.

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Obituary.

GEORGE HENRY EATON.

Mr. George Henry Eaton was born on June 9, 1860, in Staffordshire, England, and came with his parents to Canada in 1870, they locating in Brockville, Ont.

In 1876 he entered the service of the Brockville & Ottawa Railway as a carpenter's helper and in 1879 was promoted to carpenter and transferred to the Credit Valley Railway at Parkdale, Ont. On the above road being taken over by the Canadian Pacific Railway Company, he was still retained in the service in same position. In 1884 was appointed Yard Foreman at Parkdale; in 1889 was appointed Yard and Shop Foreman in charge of Toronto and Toronto Junction. In 1893 was appointed General Car Foreman of the Hochelaga Car Shop and was for a short period Acting Master Car Builder. In 1897 was appointed General Car Foreman of the Farnham Shop. In 1905 was appointed Assistant Master Car Builder, Lines West, and was transferred to Winnipeg, which position he held until the time of his death.

He was held in high personal regard by the employees of his department, and was also universally esteemed and respected by all who knew him outside of railway circles.

R. W. Burnett.

GUSTAVE LARSON.

Gustave Larson was born October 16, 1857, and died in St. Paul on January 11, 1913.

He entered the service of the Chicago, St. Paul, Minneapolis & Omaha Railway Company May 5, 1883, as Bridge Carpenter, was promoted to Superintendent of Bridges and Buildings on the Northern Division, May 6, 1896, and promoted to Supervisor of Bridges and Buildings, July 1, 1900, and appointed Master Car Builder, June 15, 1909.

Mr. Larson was a member of the Master Car Builders' Association.

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He was a strong but unassuming man. He was warm in his affections; he was generous in his conduct; he was helpful to all about him in the various relations of life; he was calm in the face of the perplexing and the unexpected; he was patient in spite of provocation. He was slow to take offense and slower yet to give it. By the unanimous testimony of all who knew him, he had not an enemy in the service of the company he had served for thirty years. To know him was to become and remain his friend.

W. H. THORN.

DANIEL EDWARD FITZGERALD.

Daniel Edward Fitzgerald was born in Cairo, Ill., April 20, 1869. At the age of nine years he moved to a farm near St. Marys, Kan.; attended country schools at this place, later entering St. Mary's College and graduating at the age of twenty.

His first railroad work was as clerk in the Store Department of the C. R. I. & P. R. R., at Horton, Kan., and soon became Chief Clerk to the Master Mechanic. A few years later he accepted a position on the Santa Fe, at Topeka, in the Motive Power Department and soon advanced to the position of Chief Motive Power Accountant.

In June, 1904, he accepted a position as Chief Motive Power Clerk with the St. L. & S. F. R. R., and July, 1909, was appointed Assistant General Superintendent Motive Power.

March 1, 1914, he accepted a position as Sales Manager of the Pierce Oil Corporation, at St. Louis, and one week later lost his life in fire which destroyed the Missouri Athletic Club of St. Louis on March 9, 1914. He became a member of the American Railway Master Mechanics' Association in 1910.

Mr. Fitzgerald was a conscientious, loyal and efficient officer. His genial character and sterling qualities endeared him to employees and friends alike, all of whom held him in the highest esteem.

His wife, two sons and one daughter survive him.

He became a member of the Master Car Builders' Association in 1910.

W. H. V. ROSING.

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OTTO F. ZEUG.

Otto F. Zeug, age forty-eight, Secretary, Union Refrigerator Transit Co., died November 9, 1913, at his home, 546 Thirty-sixth street, Milwaukee, Wis., after a brief illness of pneumonia. Mr. Zeug was Secretary of the Union Refrigerator Transit Co. for ten years, coming to Milwaukee from St. Louis, where he was Master Car Builder of the American Refrigerator Transit Co. He was born in Germany and was brought to America by his parents when ten months old. His family resided at Cleveland, Ohio. He is survived by his widow and one son, Carl Zeug. He was a member of Anchor Lodge, A. F. & A. M., of St. Louis.

CHAS. O'HARA.

CHARLES E. GOSSETT.

Born January 25, 1869, in Kentucky. Died February 19, 1913, in Minneapolis, Minn. He was educated at the Missouri State University and entered railway service during the year 1886 as a machinist helper on the Wabash, St. Louis & Pacific Ry., since which he was consecutively a locomotive fireman on the Hannibal & St. Joseph R. R., 1889 to 1891; locomotive engineer on same road from 1891 to 1894; locomotive engineer on the Wabash R. R. from 1894 to 1898; locomotive engineer, 1898 to 1901, Chicago, Rock Island & Pacific Ry.; 1901 to 1905, Road Foreman of Equipment, same road; 1905 to 1908, Master Mechanic, same road. He became Master Mechanic of the Iowa Central Ry. in 1908 and transferred to the same position on the Minneapolis & St. Louis R. R. in 1910; was made Superintendent Motive Power of the same road, January 1, 1912, which position he held at the date of his death.

He became a member of the Master Car Builders' Association in June, 1909.

G. W. SEIDEL.

HENRY C. BOSSINGER

Mr. Bossinger was born in Northampton County, Pa., October 14, 1837, and died at Huntington, W. Va., March 16, 1914; age seventy-six years, six months, twenty-eight days. Mr. Bossinger entered the service of the Chesapeake & Ohio Railway Company at Huntington, W. Va., August 6, 1873, as General Foreman of the Car Department. He remained in

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that position until September 1, 1902, at which time he was given the title of Equipment Inspector, which he held until the time of his death. He was a member of the Master Car Builders' Association and had been for a long term of years, and will, no doubt, be remembered by many of the older members of that body. He was considered highly efficient, and extremely loyal to his employers.

C. H. TERRELL.

WILLIAM O'HERIN

Mr. William O'Herin was born January 6, 1847, at New Castle, County of Limerick, Ireland, and with his parents came to the United States, September 2, 1848, the family settling in Attica, N. Y., where he received his education, and after graduating from the Attica High School he entered the service of the New York Central Railroad as locomotive fireman in 1864; was promoted to engineer on the Buffalo Division in 1872. Resigning that position to try his fortune in the West, he entered the service of the Missouri, Kansas & Texas Railway Company in May, 1873, as locomotive engineer, continuing in that capacity to June, 1883, when he was appointed Master Mechanic, Lines North of the Red River, with headquarters at Parsons, Kan. On November 1, 1888, was appointed General Master Mechanic, M. K. & T. Ry. System, which embraced the lines in Texas; on December 1, 1891, appointed Superintendent Motive Power and Machinery, and on January 16, 1896, his jurisdiction was extended over the Car Department and title changed to Superintendent Machinery and Equipment. On January 1, 1913, he was appointed Assistant to General Manager, with headquarters at Dallas, Texas, which position he held to the time of his death.

A man of sterling character and irreproachable habits, Mr. O'Herin was held in the highest esteem by all who knew him and enjoyed the fullest confidence of officials and subordinate employees alike. Living a simple, unostentatious, Christian life, always dignified but courteous in his dealings with men, imbued with a high sense of justice and fairness toward all, his good example and untiring efforts during his forty-one years of continuous service aided very materially in developing the M. K. & T. into what is recognized as one of the leading railways of the Southwest. He was a member of the American Railway Master Mechanics' Association, Master Car Builders' Association and Western Railway Club; was a wide reader of educational literature, and always took an active interest in the improvement of conditions and the observance of up-to-date methods in the operation of his department.

In January, 1907, Mr. O'Herin met with a severe accident, while superintending the work of picking up a wrecked freight train at Deerfield,

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Mo., by falling from a bridge abutment, and sustained injuries from which he never fully recovered and which hastened a general breaking down in health which occurred in the early part of 1913, and from which he was unable to rally. After taking treatment at several different sanitariums, securing the best medical attention available, he passed away at Mercy Hospital, Chicago, March 31, 1914.

The remains were taken to his old home in Attica, N. Y., for interment.

W. L. KELLOGG.

CHAS. W. WAUGHOP

Born at Capa, Ill., on the 20th day of February, 1854, and died on the 20th day of July, 1912.

He received his education in the schools of Decatur, Ill., graduating in the year 1874, and in the following year entered the employ of the Wabash Railroad. After serving in various capacities he was eventually promoted to Car Inspector and later transferred, in the year 1878, to Chicago, where he remained until the year 1881. In the latter year he came to St. Louis, having accepted the appointment as Chief Joint Interchange Car Inspector, the first position of the kind created in the United States, which he held until his death. He was always prominently identified with interchange car-inspection work and incidental problems, being a frequent attendant at various conventions, and was one of the organizers and the first President of the Chief Interchange Inspectors' and Car Foremen's Association of America.

He married Miss Orpha E. Strong at Chapin, Ill., in the year 1883, and was the father of three children, one son and two daughters. Mrs. Waughop and the three children survive him.

He was a member of the Association since 1894 and attended the conventions whenever his duties would permit.

His ripe experience in interchange work, as well as his genial and kindly disposition, which endeared him to his many friend in all walks of life, has made his loss keenly felt.

WM. BAWDEN.

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